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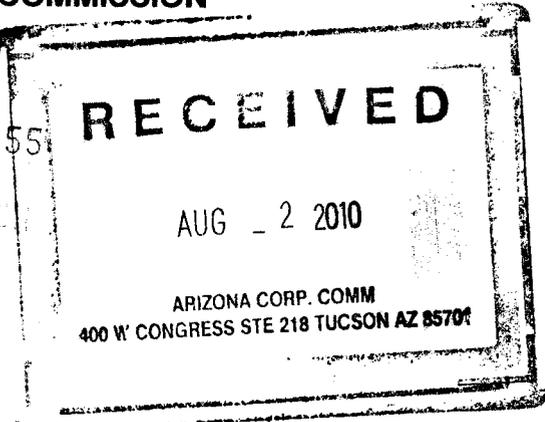
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REHEARING AUG 23 2010
BEFORE THE ARIZONA CORPORATION COMMISSION

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COMMISSIONERS

- KRISTIN K. MAYES, Chairperson
- GARY PIERCE
- PAUL NEWMAN
- SANDRA D. KENNEDY
- BOB STUMP

IN THE MATTER OF THE APPLICATION OF SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE, INC. FOR A HEARING TO DETERMINE THE FAIR VALUE OF ITS PROPERTY FOR RATEMAKING PURPOSES, TO FIX A JUST AND REASONABLE RETURN THEREON, TO APPROVE RATES DESIGNED TO DEVELOP SUCH RETURN AND FOR RELATED APPROVALS.

IN THE MATTER OF THE APPLICATION OF SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE, INC. FOR AN ORDER INSTITUTING A MORATORIUM ON NEW CONNECTIONS TO THE V-7 FEEDER LINE SERVING THE WHETSTONE, RAIN VALLEY, ELGIN, CANELO, SONOITA, AND PATAGONIA, ARIZONA AREAS.

DOCKET NO. E-01575A-08-0328

Arizona Corporation Commission

DOCKETED

AUG 4 2010

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DOCKET NO. E-01575A-09-0453

INTERVENORS' MOTION FOR A REHEARING AND TO RECONSIDER ACC ORDER NO. 71794

INTRODUCTION AND BACKGROUND

Pursuant to A.R.S. 40-253 and A.A.C. R14-3-111, Jim Rowley and Susan Scott, "Intervenors", hereby submit their Application for Rehearing and Reconsideration of Decision No. 71794 dated July 12, 2010 ("Decision") issued by the Arizona Corporation Commission ("Commission") in Docket No. E-01057A-08-0328 and E-01575A-09-0453. In addition to, and in support of, this Application,

1 Intervenor incorporate by reference the matters set forth in its (1) Closing Brief filed
2 in this docket on April 15, 2010; and, (2) Exceptions to the May 28, 2010,
3 Recommended Opinion and Oder filed in this docket on June 10, 2010

4 For the reasons set forth below, Intervenor submit that the Decision is contrary
5 to ARS Statute 40-203 "whereby the Commission is charged to find rates unjust",
6 and unsupported by the evidence presented to the Commission. Intervenor
7 request that the Commission reconsider the matter and issue a modified Decision
8 that: (1) prohibits the Cooperative from constructing a 69kV power line to the
9 Sonoita/Patagonia area; (2) reinstates the need for 1 month of collaborative public
10 forums with the Sonoita/Elgin/Patagonia Communities to discuss locally distributed
11 energy options including renewable energy; and, (3) authorize Requests for
12 Proposals for renewable and locally distributed energy alternatives which will be
13 considered for implementation in lieu of the line..

14 15 16 **ACC INTENT**

17 If the Commission's intent was as stated in Decision No. 71274,

18 "We need to ensure that the goals of some in the local communities who
19 want more investment in renewable generation to mitigate the need for the
20 project have been **fully considered** by the Cooperative."
21

22 then SSVEC's actions have not been consonant with the Commission's Order.

23 SSVEC ignores well documented needs and opportunities of the 21st century. We
24 have attached a recently released (July 2010) report from Navigant Consulting, the

1 same firm retained by SSVEC to complete the mandated "feasibility study". This
2 report,

3 ***"The 21st Century Electric Utility – Positioning for a Low-Carbon Future"***
4 **A Ceres Report – Authored by Navigant Consulting (ATTACHMENT A),**
5
6 clearly demonstrates the SSVEC commissioned Feasibility Study was biased as it is
7 contradicted by the findings of the newly released Navigant report. This report
8 contains a full reversal of all concepts in the SSVEC Study with Renewable Energy
9 and Demand Side Management as critical functions of the 21st Century Utility.

10 This highly relevant evidence was not available at the time of the hearing and
11 contains conclusions regarding the importance of alternative forms of energy which
12 were excluded from the SSVEC sponsored report. This is a report that was authored
13 by the same firm that did the report for SSVEC in response to the Commission's
14 Order *"Navigant Consulting "Independent Feasibility Study of Electric Supply*
15 *Alternatives" (Feasibility Study).*

16 The wide variances between the two reports, which were developed by the same
17 consulting company only a few months apart, challenges the impartiality of the
18 statement of work identified by SSVEC for the mandated feasibility study. SSVEC
19 contrived to exclude renewable energy as a viable solution in lieu of its preferred
20 69kV line in direct violation of the ACC order.

21 22 **EVIDENCE OF INTERVENOR COMPLIANCE TO ORIGINAL ORDER**

23 **1) Low Cost / Low Carbon Solutions were provided as ordered by ACC**

24 The solutions and motions presented throughout the case have been ignored by
25 staff and the ALJ, denying us due process in the proceedings.

1 **SOLUTION #3: (ATTACHMENT D) UTILITY WEST LLC: LOWER COST LOW**
2 **ENVIRONMENTAL IMPACT SOLUTION OMITTED FROM FEASIBILITY STUDY;**
3 **“Budget Estimate Double Circuit/Reconductor 24.9kV Line”: Est. Cost \$7.9 million.**

4 RESULT: power ... 14 Megawatts minimum
5 Cost : \$7.9million
6

7 **2) Solicited, received and completed a Low Carbon Imprint Grants to develop**
8 **a comprehensive long range plan for conservation**

- 9 a. *Together Green Grant Application (2009 - Awarded)*
10 b. *Together Green Grant Application(2010)*
11 c. *Arizona Department of Commerce, ARRA, Renewable Energy Systems*
12 *at Audubon Administrative & Research Complexes (2010 – Awarded)*
13

14 **Public, grass-roots, community affirmation and commitment demonstrated at**

15 **JUNE 29, 2010 ACC OPEN HEARING**

16 During this Open Hearing the Community reaffirmed clean viable solutions by
17 bringing in expert witnesses to testify in front of the Commission. The commitment of
18 the Community Members was also shown once again to be above par. The 2009
19 Recognition Award SSVEC received for most Solar PV installed per Customer is
20 evidence of the communities efforts as the burden of installation was individually and
21 privately borne by the members of the community and not by the cooperative.

22 According to Chairman Mayes at the Hearing;

23 “I’m disappointed that the public forums weren’t viewed as
24 completely adequate and that the study wasn’t viewed by everyone as
25 completely adequate. And, frankly given what I heard this morning, ***I can’t***
26 ***say that I feel as though the study was completely up to snuff either.***
27 ...

28 But when I asked the question whether demand response, energy
29 efficiency, and solar and other renewable were looked at and taken in their

1 totality, the **answer was not**, and I'm just not sure why that is. I would like
2 to have had the opportunity to have that question answered more
3 fulsomely." " ...the **company owes it to its customers** ... to make sure
4 that, you know, **future power lines that don't need to be built aren't**
5 **built...**"
6

7 The July Navigant "Ceres Report" sheds light onto the need for more answers,
8 more inclusive "real dialogue", and outside bids for "Low Carbon / Low Cost" solutions.
9 The time to stop unnecessary power lines from being built is BEFORE they are built.
10 The time is now.

11 The original order, ACC Decision #21274, charged SSVEC to hold Public
12 Forums in the affected area for **6 months following the Feasibility Study Results**, for
13 the discussion of alternative energy solutions. The due process of the community is
14 violated as this discussion and involvement was not allowed. The constitutional rights
15 of free speech and supposed Cooperator involvement were quashed by the heavy
16 handed propaganda of this utility.

17 Only two of the promised public forums were conducted within only 3 days and
18 strictly to the letter of the Decision. They were structured to preclude any meaningful
19 public dialogue, particularly in reference to renewable generation, distributed generation
20 and demand side management options, which was part of the original order, Decision
21 #21274.

22
23 "...public forums ...topics shall include, but not be limited to, addressing how
24 renewable energy generation (in particular distributed generation) could be
25 incorporated into the generation plans to serve the (V7) area....."

26 Further per ACC Decision #21274, "SSVEC, Inc. shall not commence
27 construction of the referenced 69kV line until the public has had an opportunity to
28 review and comment on the report...";
29

1 Staffs interpretation of this Decision was flawed, accepting the reduction of Public
2 Forums from a timeframe of **6 months to 3 days** in the affected area precludes any
3 meaningful, open, or collaborative discussion or research, as was the intention of
4 Decision #21274.

5 **WILDCAT SILVER – HARDSHELL PROJECT**

6 Please reference Steve Getzwiller's letter to the Docket (ATTACHMENT F) that
7 Wildcat Mine had received a letter from SSVEC concerning a possible power
8 agreement.

9 Wildcat Silver – Hardshell Mine Project – should pay for the line extension from
10 Hwy 90 if it requires power. The Cooperators should not have to bear this cost for a
11 private company's line extension. It is well documented that the 69kV line is more
12 power and more expense than is necessary for a future 20year - 2,000 kW need for this
13 area.

14
15
16 **SSVEC SHOULD BE HELD IN CONTEMPT OF THE ORDER, BECAUSE THE**
17 **ORIGINAL ORDER 71274 WAS NOT IMPLIMENTED. SSVEC MANIPULATED THE**
18 **ORDER BY EXCLUDING LOW CARBON OPTIONS AND LIMITED PUBLIC INPUT**
19 **EVIDENCED BY:**

20 **1) THE TWO CONTRIDICTORY NAVIGANT STUDYS (demonstrates leading**
21 **SSVEC study)**

22 **2) NATURAL GAS OPTION EXCLUDED FROM STUDY**

23 **3) PUBLIC FORUMS NOT PROVIDED AS REQUIRED OR PROMISED**

1 Based on SSVEC's failure to comply with the conditions of the order, the ruling should
2 be reconsidered to ensure that the full measure of the law and scope of alternatives is
3 fairly evaluated.

7 CONCLUSION

8 **The Arizona Corporation Commission has a responsibility to the rate payers of**
9 **SSVEC to assure rates are fair (ARS Statute 40-203) and protect them from a**
10 **utility that is not working with stakeholders that wish to implement a clean**
11 **renewable energy future.**

12 In practice the ACC has shown the State of Arizona they are aggressively
13 supporting renewable and clean energy resources, through the REST Program and
14 other Clean Energy Programs.

15 The Intervenors believe it is negligent on the part of ACC to allow SSVEC to
16 spend an estimated \$14 million of its ratepayers' money on the proposed 69kV line
17 when several much more cost effective and environmentally sensitive solutions exist, as
18 presented to the ALJ and ACC June Open Hearing and previous filings.

19 Our solutions so far presented can save the utility up to \$10million, (during tough
20 economic times); eliminate the impact of a new utility corridor through this area; and
21 reduce the implementation timeline for the operation of more reliable energy sources.

22 They are summarized here, all solutions and combinations thereof address the 2
23 Megawatt need by 2029, well before that time frame. :

- 1) Reconductor/Double Circuit present V7 Feeder: \$7.9million
- 2) 1Megawatt Solar Array with 1Megawatt storage: \$6.5 million
- 3) 1 Megawatt Natural Gas Generator : \$1 million
- 4) Install 4 – 375kW Natural Gas Fired Generators: \$4 million.

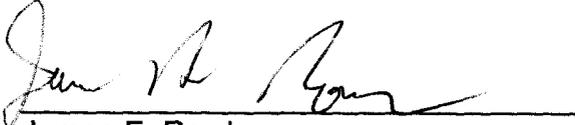
Other solutions that were not given fair vetting in the Feasibility Study that will multiply the effectiveness of these solutions: are Demand Side Management and Conservation.

RECOMMENDATION

We respectfully request a rehearing in this matter to ensure that the best possible, most cost effective, low carbon, and immediately available solution be fully considered.

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Respectfully submitted on this 2nd day of August 2010,



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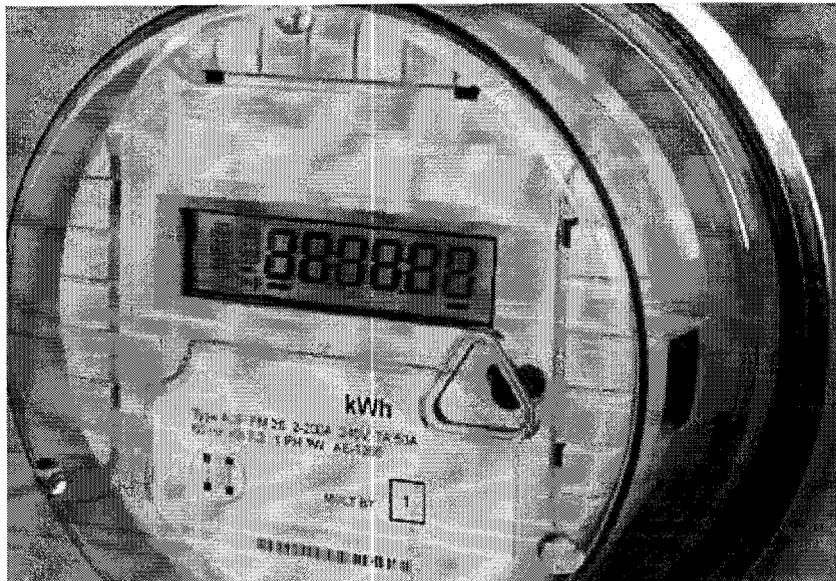
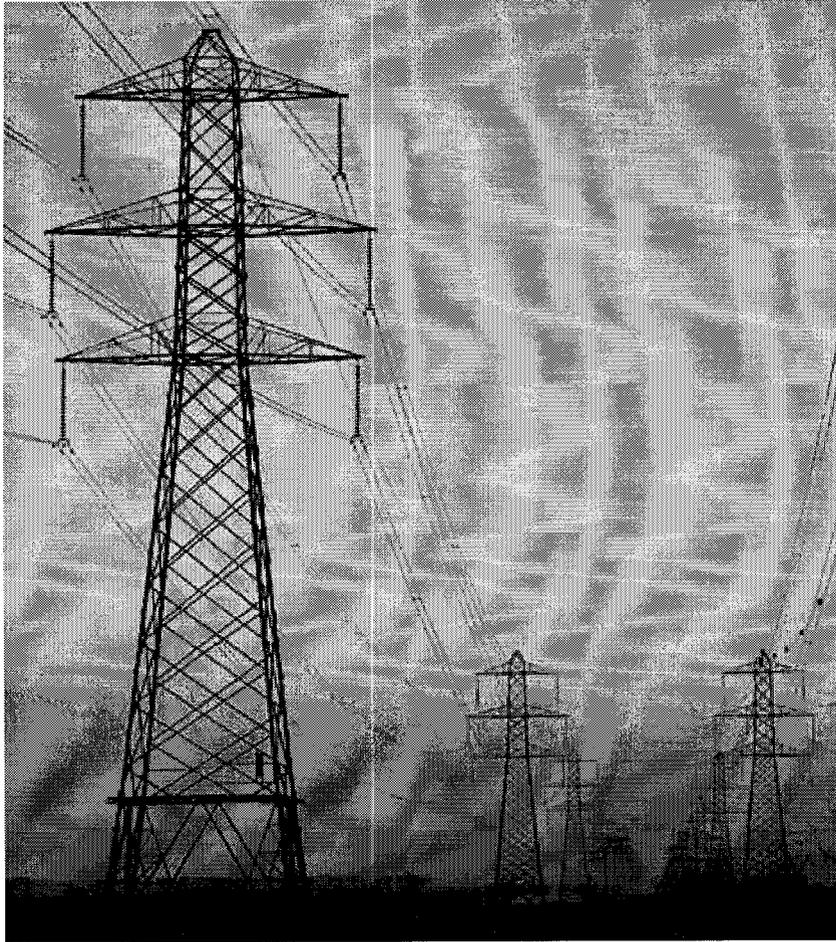
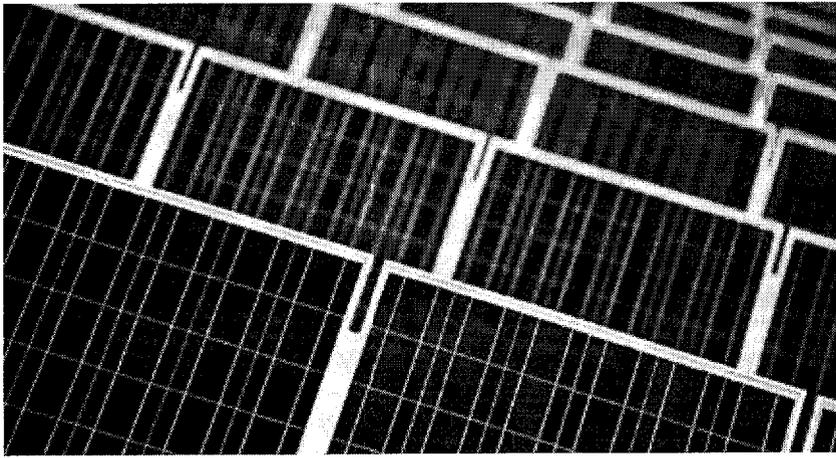
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1 **Attachments:**

- 2 1. All Filings by SSVEC, Intervenors and their witnesses including those rejected by
3 the Decision.
- 4 2. Transcripts
- 5 3. Final and Draft Navigant Feasibility Study
- 6 4. *"The 21st Century Electric Utility – Positioning for a Low-Carbon Future": A Ceres*
7 *Report – Authored by Navigant Consulting (ATTACHMENT A)*
- 8 5. Bids Received
- 9 a. Avian Engineering & Consultation (*ATTACHMENT B*)
10 Solar PV Project Proposal (Solar PV, Storage, Natural Gas Generator)
- 11 b. Elite Energy (*ATTACHMENT C*)
12 Budgetary Proposal: Sonoita Reliability Project (Natural Gas Generators)
- 13 c. *Utility West, LLC (ATTACHMENT D)*
14 *Budget Estimate Double Circuit/Reconductor 24.9kV Line*
- 15 6. Letter, Legal Opinion, & Case Law : Prescriptive Easement (*ATTACHMENT E*)
- 16 a. Katharina Richter (letter and Case Law)
- 17 b. Larry Schubart (letter)
- 18 7. Grant Information : (*ATTACHMENT F*)
- 19 a. *Together Green Grant Application (2009 - Awarded)*
- 20 b. *Together Green Grant Application(2010)*
- 21 c. *Arizona Department of Commerce, ARRA, Renewable Energy Systems*
22 *at Audubon Administrative & Research Complexes (2010 – Awarded)*
- 23 8. Information about Wildcat Mine: (*ATTACHMENT G*)
- 24 a. Hardshell Mining Project
- 25 b. Patagonia Times Article
- 26 Steve Getzwiller Letter to Commission

Attachment

A



The 21st Century Electric Utility

*Positioning for
a Low-Carbon Future*

July 2010



A Ceres Report

Authored by

NAVIGANT
CONSULTING

Ceres commissioned this report from Navigant Consulting.

Ceres is a national coalition of investors, environmental groups and other public interest organizations working with companies to address sustainability challenges such as global climate change. Ceres directs the Investor Network on Climate Risk, a group of more than 90 institutional investors and financial firms from the U.S. and Europe managing approximately \$10 trillion in assets.

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Cave Dog Studio designed the final report.

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The 21st Century Electric Utility

*Positioning for
a Low-Carbon Future*

July 2010



A Ceres Report

Authored by

NAVIGANT
CONSULTING

Preface by *Mindy S. Lubber*

Most experts who follow the U.S. electric power sector agree that the industry stands at a crossroads. This Ceres report reaffirms that perspective; as report author Navigant Consulting concludes, “changes underway in the 21st century electric power sector create a level and complexity of risks that is perhaps unprecedented in the industry’s history.”

Once extremely stable and predictable, today’s electric power sector faces an array of challenges and opportunities amid a fast-shifting landscape. New approaches to serving customers by using less energy, cleaner energy and emerging technologies are taking hold at the same time that business-as-usual approaches have become more expensive, complicated and risky. Complying with scientists’ urgent calls to dramatically reduce greenhouse gas (GHG) emissions also has enormous implications for the power sector, the largest source of U.S. and global emissions. Responding to these trends requires nothing short of a fundamental rethinking of how we produce, transmit and use electricity.

Investors are paying close attention to how electric utilities are responding to this shifting landscape. The Investor Network on Climate Risk (INCR), a Ceres-organized group of more than 90 institutional investors managing about \$10 trillion in assets, has engaged with electric utilities since 2003 on their strategies to mitigate climate risks and prepare for emerging carbon-reducing regulations. A recent INCR report found that asset managers view the utility sector as being uniquely exposed to climate risks. Earlier this year, after numerous requests from investors, the U.S. Securities and Exchange Commission issued formal guidance requiring utilities and other publicly-traded companies to disclose “material” climate-related risks in their financial filings, including impacts from carbon-reducing policies.

But investors and analysts are increasingly aware that the discussion about the 21st century electric utility extends far beyond carbon. Energy efficiency – serving customers by helping to reduce electricity demand – is likely utilities’ most important energy resource in the 21st century, as this report points out; but utilizing this resource requires a new business model that doesn’t rely on electricity sales to drive profits. And given the investment required to modernize and decarbonize our electricity system – an amount estimated well into the trillions – utility “best practices” such as transparent planning and proactive stakeholder engagement are now essential business activities for mitigating political risks and facilitating cost recovery of proposed investments.

This report identifies five key elements of a 21st century electric utility business model and makes specific recommendations to utilities as they transition to a low-carbon future. It is by no means the final word on this complex and constantly evolving subject. Rather it is a starting point for utilities, policymakers, regulators, investors, analysts, and advocates to consider the utility decisions and behaviors best suited to helping us realize the energy future we all want – a future that, as the report says, “minimizes cost, risk and environmental impact, and maximizes opportunity, options and societal benefit.”

Mindy S. Lubber is president of Ceres and director of the Investor Network on Climate Risk.

Foreword by Tom King

Today's electric utilities face unprecedented challenges. On top of our traditional goals of safety, efficiency and reliability, the modern utility must address global environmental issues such as climate change, national security issues surrounding our dependence on foreign energy, and a growing desire by customers to have greater control over their energy use decisions to lower costs and decrease their environmental footprint.

Meeting our customers' demands to turn these challenges into opportunities requires transformation of the traditional electric utility business model. Delivering safe and reliable electricity will always form the bedrock of what we do, but the modern utility must expand its vision and adapt to changing circumstances in order for our employees to provide energy sustainably for our customers, communities and shareholders.

This begins with addressing climate change, the seminal issue that impacts our global environment and economy today. As public utilities, we should make our business decisions and set our financial targets with climate change issues and carbon reduction goals at the forefront. This ranges from factoring the price of carbon into major capital investment decisions to elevating key sustainability issues such as climate change to the governance level. At National Grid, one way we are trying to embody that approach is by linking executive compensation to performance on specific goals in meeting greenhouse gas reduction targets.

Fortunately, as Ceres details in this *21st Century Electric Utility* report, many of the actions that we must take to address climate change will benefit our customers and communities in a variety of ways. Energy efficiency is a prime example. Energy efficiency can cost as little as 3 cents per kilowatt hour saved, while electricity costs 6 to 12 cents per kilowatt hour. Thus, energy efficiency measures reduce emissions, avoid unnecessary energy supply investments, lower customer bills and create jobs for electricians, plumbers, laborers, and engineers. Despite these obvious advantages, we have historically grossly underinvested in energy efficiency as an industry. Altering this course by investing in all cost-effective energy efficiency measures is the most effective way to both reduce greenhouse gas emissions and lower customer bills.

Expanding and diversifying our investments in wind, solar and other forms of renewable and low-emission electricity is also critical. This includes not only large scale renewable energy projects, but facilitating local, distributed energy solutions – from solar homes to fuel cells. In conjunction with Smart Grid technologies that optimize energy delivery and use, these alternative, innovative uses of energy will enhance our energy security by reducing our dependence on foreign energy, make our electricity supply more diverse and reliable and create sustainable “green” jobs.

To be sure, electric utilities cannot achieve these goals on their own – it requires the support of our customers and other stakeholders and supportive policies such as federal climate change legislation, revenue decoupling and renewable energy and energy efficiency portfolio standards. However, it is incumbent on us to lead the transformation of our industry, and Ceres' *21st Century Electric Utility* report provides an indispensable blueprint for making the transition a success.

Tom King is president of National Grid U.S.

Executive Summary

The successful 21st century electric utility company will be very different from the utility of the 20th century. To remain competitive, today's utility must respond to the risks and opportunities from climate change, carbon costs, volatile fuel prices, emerging clean technologies, expanding energy efficiency programs, increasing customer expectations and competing third party energy providers. Responding to these challenges will require new core competencies and revised business models for U.S. utilities.

The Shifting Landscape of the 21st Century Electric Power Sector

The business landscape for electric utilities is shifting quickly. In turn, the traditional operating paradigm of building large generation facilities to sell ever-increasing amounts of electricity is changing. Key drivers include:

- The imperative to reduce greenhouse gas (GHG) emissions upwards of 80 percent by 2050 (Figure ES-1);
- Significant climate/clean energy policy momentum in a majority of U.S. states, with likely near-term federal action that will further increase costs and complicate development of fossil-fuel based electricity generation;
- Continued declines in production costs for renewable energy technologies;
- Growing support and uptake of regulatory policies to allow utilities to utilize large-scale energy efficiency as the lowest-cost energy resource;
- Implementation of Smart Grid technologies that offer utilities and their customers the information and tools to better manage electricity usage;
- Growing interest and activity in the development of plug-in electric vehicles (PEVs); and
- Increasing recognition of domestic natural gas as a resource that is less carbon intensive than other fossil fuels for large scale electricity generation, complementary to renewable energy resources, and domestically abundant.

While each of these drivers will materially influence the electric power sector in the coming years, one of the greatest effects will be felt from climate change concerns and the pursuit of steep reductions in greenhouse gas emissions. This is because the electric power sector is the largest single source of U.S. and global carbon dioxide emissions, responsible for approximately 40 percent of total emissions. When carbon dioxide emissions are factored in, the economics of producing electricity with large, centralized fossil-fueled generation will change considerably.

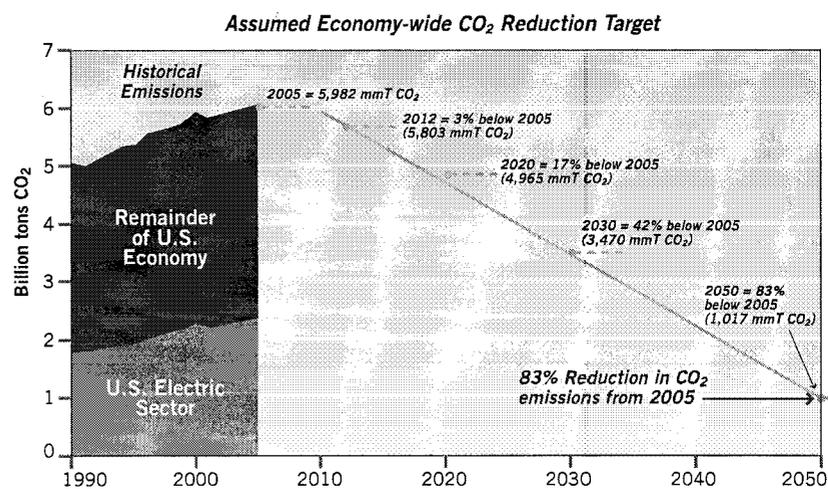


Figure ES-1: Illustration of 80 percent CO₂ reduction by 2050

Source: Electric Power Research Institute

Executive Summary

Clean energy resources available today will play a critical role in achieving CO₂ reduction targets. Energy efficiency and some renewable energy resources can reduce GHG emissions cost-effectively, while maintaining electric system reliability and reducing system-wide risk. However, deploying these clean energy resources at a large scale presents fundamental challenges:

- First, most utilities lack sufficient regulatory support;
- Second, the traditional utility business model is based on electricity sales which would be eroded by energy efficiency and distributed clean energy resources; and
- Third, the capabilities of the existing electricity delivery infrastructure may limit the amount of clean energy resources that can be integrated without compromising reliability or increasing cost excessively.

A utility that deals effectively with these trends, and receives sufficient support from regulators and legislators, will be better positioned to succeed in the 21st century. All else equal, such a utility is also more likely to attract lower cost capital, enabling it to earn stronger returns for investors. On the other hand, a utility that fails to effectively manage risk, including higher carbon exposure, may suffer greater financial impacts if climate legislation takes hold and fossil generation costs rise.

Factor	20th Century	21st Century
Business Model	Simple, based on steadily increasing electricity sales typically from an expanding asset base of centralized generation and traditional ¹ delivery infrastructure	Complex, integrated energy services serving diverse and evolving customer needs with an information-enabled infrastructure
Electricity Demand	Increasing	Flattening with potential decline, exception being the deployment of new electric vehicles ²
Capacity Cost	Average cost of new capacity stable or declining	Average cost of new capacity increasing ³
Cost of Carbon	None	Moderate and increasing
Utility Objectives	Reliability, Customer Service, Affordability (low rates), Returns to Shareholders ⁴	Reliability, Environmental Quality, Service Quality, Affordability (low bills), Returns to Shareholders
Role of the Customer	Passive	More active, equipped with the technology and incentives to manage energy consumption and generate energy

Table ES-1: *Differences between the Utility Business in the 20th and 21st Centuries*

1. Although new technologies have been introduced, long equipment lifecycles, standardization and utilities' aversion to risk have tended to limit the implementation of innovative transmission and distribution system technology.
2. New energy services such as powering electric vehicles may increase demand, but the net impact is currently unclear.
3. The cost of new capacity will be partially offset as low carbon generating resources become commercially mature.
4. Investor owned utilities, in addition to managing costs, have the goal of earning market-based returns for shareholders, while publicly owned utilities have the goal of minimizing cost for members.

Executive Summary

Key Elements of a 21st Century Utility Business Model

In addition to maintaining highly efficient business operations and effectively managing capital, successful U.S. utilities in the 21st century will need to do several things well:

1. Manage carbon across the enterprise. With national climate and energy legislation under consideration and a patchwork of state and regional carbon-reducing policies already in place, it is expected that all utilities will have to deal with expected carbon controls in the future, and probably within their system planning horizons. Utilities should account for carbon emission costs in resource planning, and align those costs and risks with likely carbon-reduction scenarios. Failing to effectively mitigate carbon risk will lead to higher shareholder and lender risks, as well as unreasonably burdening ratepayers with higher costs. Investors and utility commissions will be scrutinizing electricity supply portfolios more closely to evaluate impacts associated with new climate regulations.

2. Pursue all cost-effective energy efficiency. Energy efficiency is among the least expensive energy resources for utilities (Figure ES-2), and one of the most cost-effective ways to reduce GHG emissions. As policymakers, regulators and utilities grapple with the challenge of achieving steep emissions cuts, energy efficiency is likely to emerge as the single most important energy resource for the 21st century power sector. Studies show that energy efficiency lowers consumer energy bills, and implementing it becomes less expensive as utilities use it more widely. Because energy efficiency reduces electricity sales, it has not been fully adopted by most utilities due to their rate structure being directly tied to consumption. However, supportive regulations and ratemaking mechanisms are making it more attractive for utilities to pursue cost-effective energy efficiency.

3. Integrate cost-effective renewable energy resources into the generation mix. The U.S. is one of the strongest and most attractive renewable energy markets in the world. With continued downward movement in production costs and prices, and upward pressures sustaining or increasing fossil-generated power costs, simple operating economics are becoming an increasingly powerful driver for renewables growth. The U.S. has seen substantial and promising growth in large-scale wind and concentrating solar power (CSP) installations in recent years. However, achieving Renewable Portfolio Standard (RPS) targets using only large-scale renewable energy resources will be challenging due to the need for new transmission development which encompasses siting, permitting, environmental and cost constraints. For these reasons, a growing number of states and utilities are pursuing expanded investment in distributed energy

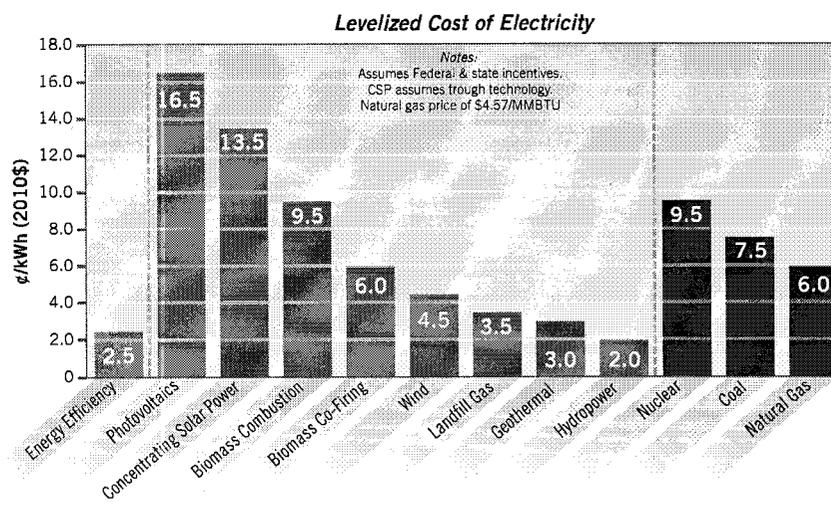


Figure ES-2: Cost of EE as Compared to Other Resources
Source: Navigant Consulting, Inc.

3. Integrate cost-effective renewable energy resources into the generation mix. The U.S. is one of the strongest and most attractive renewable energy markets in the world. With continued downward movement in production costs and prices, and upward pressures sustaining or increasing fossil-generated power costs, simple operating economics are becoming an increasingly powerful driver for renewables growth. The U.S. has seen substantial and promising growth in large-scale wind and concentrating solar power (CSP) installations in recent years. However, achieving Renewable Portfolio Standard (RPS) targets using only large-scale renewable energy resources will be challenging due to the need for new transmission development which encompasses siting, permitting, environmental and cost constraints. For these reasons, a growing number of states and utilities are pursuing expanded investment in distributed energy

Executive Summary

resources (DER) such as solar photovoltaics (PV) (Figure ES-3). Recent analysis by Navigant Consulting indicates that in some parts of the U.S. PV has the potential to achieve grid parity by 2015, or sooner depending on pricing and incentive levels.

4. Incorporate Smart Grid technologies for consumer and environmental benefit. Smart Grid technologies, including smart metering, distribution automation and synchrophasor monitoring are entering the mainstream, with most U.S. utilities involved in full-scale system implementations or pilot programs.

RPS Policies	Solar carve-outs/compliance
Revenue Opportunity	Opportunity to rate-base solar assets and leverage existing corporate functions
Federal ITC	Utilities can now use the 30% ITC through 2016
Added Resource	Quick way to deploy RE, avoiding challenges related to transmission, interconnection, permitting
3rd Party Threat	3rd party solar service providers could lead to utility revenue erosion
Brand Halo	Some utilities see solar as a way to create a brand halo
Potential FASB Changes	Financial Accounting Standards Board may reclassify Power Purchase Agreements (PPAs) as debt

An effective Smart Grid will help reduce both peak electricity demand and overall energy consumption. It will integrate increasing amounts of renewable energy and improve grid efficiency. It will also help utilities gain operational efficiencies and manage infrastructure and operating costs. Utilities should ensure that they implement the Smart Grid in a manner that maximizes consumer and clean energy benefits, including energy efficiency and demand management, and integration of renewable and distributed energy.

Figure ES-3: Key Drivers of Utility Ownership of PV

Source: Navigant Consulting, Inc.

5. Conduct robust and transparent resource planning. Utilities should employ open and transparent planning processes that consider the risks, probabilities, benefits, impacts and applications of multiple energy resources under various scenarios. Planning processes should include a full commitment by utilities to implement cost-effective energy efficiency and renewable energy. Resource planning should involve greater stakeholder involvement on a wider regional level and consider the full spectrum of energy efficiency and distributed energy resources. Clear policy frameworks allow all parties to better understand the goals and regulatory objectives that will influence or constrain the planning process. Finally, utilities should update planning processes to reflect current and future costs for CO₂, energy efficiency, distributed energy resources, equipment and permitting.

Financial Implications

Building a clean energy supply and a Smart Grid infrastructure will require utilities to capitalize hundreds of billions of dollars in rate base. Given that average retail electricity rates have increased an average of 50 percent across all sectors over the past 10 years,⁵ increasing them even more will be challenging. It is expected that regulators will be more comfortable approving large-scale investments and their associated rate adjustments when the associated risks have been clearly accounted for and managed. Protracted approval processes associated with investments that are perceived by regulators to be unclear or questionable present a significant financial risk to utilities. Some financial analysts are predicting that key credit metrics for utilities

5. U.S. Energy Information Administration

Executive Summary

will be negatively impacted in the long term due to cost recovery risks from downward rate pressure.

Key Regulatory Policies for the 21st Century Electric Power Sector

Mandatory regulatory policies will be needed to enable utilities to deploy the approaches and technologies described in this report. These policies, which typically fall within the purview of state governments and utility regulatory commissions, include:

- **Clean energy policies** that set an overall direction aligning clean energy goals across government agencies (including utility regulators); promote the development and compatibility of complementary policies; and demonstrate a commitment to clean energy resources;
- **Enforceable Renewable Portfolio Standards** that incentivize compliance, provide clear market signals for utilities, and reward those parties that deliver results;
- **Revenue decoupling** to remove utilities' inherent disincentive to implement large-scale energy efficiency;
- **Effective net metering for distributed generation** to facilitate consumer investment in on-site renewable energy generation; and
- **Incentive ratemaking for utilities** to provide premium returns on the "right" utility investments.

Additionally, it is likely that the federal government will set policies that put a price on carbon and increase energy independence, renewable energy and energy efficiency.

Conclusion

Utilities, whether investor owned or consumer owned, are public entities that build and operate the electricity infrastructure that powers our nation and economy. They have an obligation to serve customers in a way that minimizes financial and environmental risk. The ideas discussed in this paper are based on two lynchpin principles that utilities should:

- Minimize cost, risk, and environmental impact; and
- Maximize opportunity, options, and societal benefit.

Utilities need to deploy capital in ways that provide affordable and secure electricity, while meeting the nation's climate objectives. Pursuing approaches that are overly capital-intensive puts upward pressure on electricity rates and increases the risk of unfavorable recovery of cost. This, in turn, could lower a utility's credit rating and increase its cost of capital. Utilities that pursue diversified strategies utilizing cost-effective energy efficiency and distributed energy resources are likely to reduce capital investment risk.

The most successful utilities will likely be those that pursue this agenda aggressively, transparently, and across all aspects of the business. The inherent risk management benefits of this approach are apt to be recognized by the financial institutions that rate and lend to electric utilities. The ongoing support of credit rating agencies and financial institutions is crucial to maintaining the momentum of capital into the ongoing transformation from a simple, regimented, centralized commodity seller to a complex, diversified, innovative service provider.

Key Report Recommendations for U.S. Utilities

Manage Carbon Across the Enterprise

- Make an overall corporate commitment to minimizing carbon emissions as a central guiding policy;
- Perform rigorous scenario analysis that assumes a range of carbon costs;
- Incorporate carbon prices into business and energy resource plans;
- Complete an internal inventory of greenhouse gas (GHG) emissions using widely accepted standards;
- Set a meaningful GHG reduction target that will help prepare the company for future regulation; and
- Disclose relevant data and plans thoroughly to stakeholders.

Pursue All Cost-Effective Energy Efficiency

- Recognize the value of energy efficiency;
- Actively seek out lessons learned and best practices from other jurisdictions;
- Advocate for appropriate policies that support aggressive energy efficiency;
- Develop goals that aim for at least 1% annual electricity savings, consistent with results achieved by leading utility programs;
- Fully include energy efficiency in electric system resource planning; and
- Follow rigorous and transparent monitoring and verification (M&V) protocols.

Integrate Cost-Effective Renewable Energy

- Actively pursue development of a range of renewable energy projects to meet and/or exceed state renewable targets;
- Consider owning PV assets to gain experience in their implementation given the potential near-term grid parity and possible threat of third party providers serving utility customers solar power;
- Evaluate business models being used by private competitors and other utility companies to own distributed energy resources and other renewable assets; and
- Create new risk hedging and grid management mechanisms to deal with variance in customer load response and intermittent renewable energy resources.

Incorporate Smart Grid Technologies for Consumer and Environmental Benefit

- Simplify the interconnection and integration of distributed renewable energy resources;
- Leverage the operational efficiencies provided by Smart Grid technology to reduce operational costs;
- Prioritize Smart Grid investments that seek to maximize benefits from energy efficiency, energy delivery, and clean energy technologies;

Key Report Recommendations for U.S. Utilities

- Provide customers with information and energy management technologies that are aligned with effective pricing programs; and
- Build out the Smart Grid by pursuing a long-term capital improvement program premised on delivering enhanced value to consumers.

Conduct Robust and Transparent Resource Planning

- Utilize transparent analysis and decision frameworks;
- Fairly evaluate energy efficiency and renewable energy in robust scenario analyses;
- Facilitate input from key stakeholders; and
- Educate the public and policy makers about complex energy issues

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I. Introduction: *The Shifting Landscape of the 21st Century Power Sector*

Powerful trends are transforming the U.S. utility sector, including climate change, energy security, and energy price volatility concerns; increasing deployment of alternative resources like energy efficiency and renewable energy; and shifts in natural gas and other fossil fuel industries. Utilities that respond most effectively to these key trends – and whose regulators and legislators support them in doing so – will be best positioned to succeed in the 21st century. Below are highlights of key drivers facing the industry.

Climate Change: A Major Challenge

Climate change is one of the biggest and most complex challenges the world faces today – and utilities are commonly identified as key players in how to respond.

The most recent assessment from the Intergovernmental Panel on Climate Change (IPCC), a worldwide body of hundreds of climate scientists from more than 130 countries, concludes that warming is “unequivocal” and that observed increases in temperatures are “very likely” due to rising greenhouse gas concentrations from human activity. While there is uncertainty on how much warming we can expect, there is strong scientific consensus of the urgency for reducing heat-trapping emissions 50 to 80 percent by 2050.

The electric power sector produces 40 percent of U.S. carbon dioxide (CO₂) emissions, making it a top target of carbon-reducing policies. State and regional governments are already limiting greenhouse gas emissions from electric generation plants. Sector companies operating in multiple states face management challenges and associated costs from these varying regulatory environments. Eighteen states have taken initial steps towards greenhouse gas (GHG) trading systems, including the Western Climate Initiative, California's Global Warming Solutions Act, Florida's State Action Team on Energy and Climate, and the Regional Greenhouse Gas Initiative in the northeast. Some states have taken action to limit CO₂ emissions from electric generation by prohibiting utilities from building new coal-fired generation without carbon sequestration, or from signing long-term supply contracts from such generation. Some state laws also require new generation plants to offset some other their projected CO₂ emissions.

In the U.S., national climate legislation to reduce CO₂ emissions from utilities and other sources is widely seen as inevitable, although such legislation may not pass in 2010. In June 2009, the House of Representatives passed the American Clean Energy and Security Act, landmark legislation to cap GHG emissions across all sectors of the economy. As this report went to press, several alternative bills to limit carbon emissions across the economy or specifically in the electric power sector were under consideration in the Senate.

Energy Security: A Growing National Priority

In this country there is strong interest in achieving greater energy independence and increasing the security of our energy infrastructure. This is leading to growing support for the transition of America's transportation fleet away from oil toward other energy sources, including electricity. The vigorous development of plug-in electric vehicles (PEVs) would require increased flexibility and robustness of the electricity infrastructure. Enhancing the reliability and resilience of the electricity grid to withstand major equipment outages, weather effects, and potential terrorist attacks is also gaining attention.

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Customer Involvement: Leveraging Technology to Better Manage Energy Use

The energy industry, like most others, will continue to experience an evolution in customer expectations, from information on demand to high degrees of control and engagement to the ability to create collaborative and personalized interaction channels with energy service providers. Experts increasingly mention customer involvement and the conversion of end-use load into an energy resource as one of the most transformative changes the industry will undergo. The capability and complexity of loads, including smart appliances, energy management systems, plug-in electric vehicles, and distributed energy resources, are creating the opportunity to engage customers as active energy partners rather than passive ratepayers. The expectation is that new energy products will emerge, including service bundles, customized service levels, and retail energy exchanges.

Grid Technology: Creating Greater Intelligence

Over the 20th century, many of the core technologies used in the power sector for the production and delivery of electricity remained relatively unchanged. Even now, much of the power equipment in service would be recognizable to the utility engineers from the early 1900s. However, over time utilities have applied technology strategically to increase reliability and reduce cost. In recent years, advancements in information technology, communications and electronics have been applied to electric power systems. Increases in capability and reductions in cost for this technology mean that utilities are deploying it at greater scale, which will enable fundamental changes in the way the grid is configured and operated.

Electricity Demand: Multiple Factors Pushing it Down

In the late 1990s and early 2000s, energy use per capital in the U.S. leveled off and began to decline slightly.⁵ The recent economic recession resulted in a sharp reduction in energy use, and it is not clear how quickly demand will return to pre-recession levels. The increasing attention and activity around energy efficiency means that electricity demand could continue to drop over the long term.

Defining the U.S. Electric Utility Industry

In recent years, the idea of an “electric utility” has become more diverse and complex. Policy changes at the federal and state levels have reshaped the electric power sector and the structure of the organizations that generate, deliver and sell electricity to end users. For the purposes of this report, utilities include organizations that deliver electricity to customers and charge those customers for that service. These utilities may obtain electricity from their own generators, from other parties, or both, but it is not necessary that they own and operate generation.

Different types of utilities are regulated differently. **Investor owned utilities** are for-profit companies regulated by state utility commissions. **Municipal utilities** are regulated by municipal governments in their various forms. **Cooperatives** are regulated by boards or committees elected by their members, subject to Rural Utility Service standards. (Co-ops may also be regulated by state commissions in certain aspects of their operations.) The structure and regulation of different utilities affect the business models and incentives that, in turn, affect the way each utility approaches clean energy. This report focuses primarily on investor owned utilities, although much of the content should be relevant for municipal utilities and cooperatives.

5. U.S. Energy Information Administration, “Annual Energy Outlook 2010”

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Renewable Energy: Gaining Share in the Supply Mix

Renewable energy is benefiting from advancements on multiple fronts. State policies are mandating it, technology advancements are increasing its performance, and manufacturing scale and process improvements are driving down cost. While renewable energy is still a relatively small portion of the overall energy resource mix, it has been a significant part of new capacity additions in the U.S. in the last few years. This trend is expected to continue.

Natural Gas: An Increasingly Important Strategic Resource

Energy security concerns and technology development are driving momentum for increased reliance on domestic natural gas reserves. Recent technological breakthroughs in extracting natural gas from shale and other "tight" formations have led to a startling reassessment of the nation's natural gas supplies, previously thought to be dwindling. Some experts now predict that the U.S. has over 100 years of proven and potential natural gas supply at current levels of demand. Natural gas is positioned to play a growing role as a complement to variable renewable energy resources. In addition, natural gas can help optimize overall energy efficiency by integrating thermal and electric technologies and end-uses.

Coal: Facing an Array of Challenges

The majority of the nation's coal-fired power plants are at least 30 years old, with many approaching retirement age. Forthcoming regulations from the U.S. Environmental Protection Agency (EPA) to reduce power plant emissions of nitrogen oxides, sulfur dioxide, mercury and other air toxics are expected to materially increase and accelerate coal plant retirements; Bernstein Research concludes that such EPA regulations would likely result in the retirement of roughly a quarter of U.S. coal-fired generation by 2015.⁶ In 2008, the U.S. Geological Survey's investigation of the nation's largest and most profitable coalfield found that its economically recoverable coal reserves could amount to only 6 percent of previous estimates, raising questions about the long-term price and availability of coal in other areas of the U.S.⁷ More than 120 proposals for new coal-fired power plants have been canceled over the last decade due to concerns about environmental and financial risks, while another 50 face continued legal opposition.⁸

Nuclear Power and Carbon Capture and Storage: Significant Uncertainties Remain

Carbon capture and storage (CCS) and nuclear power are important technological options to decrease carbon emissions, but face considerable financing and implementation challenges. In a February 2010 report, Moody's concluded that "companies that pursue new nuclear generation will take on a significantly higher business and operating risk profile, based on the risks associated with long-term approval, construction and execution processes needed

6. Bernstein Research, "U.S. Utilities: A Visit to Washington Finds Utility Lobbyists & Environmentalists Agreeing on the Grim Outlook for Coal," 9 March 2010.

7. U.S. Geological Survey, "Assessment of Coal Geology, Resources, and Reserves in the Gillette Coalfield, Powder River Basin, Wyoming," December 2008.

8. Lester Brown, "Coal-Fired Power on the Way Out?," 24 Feb 2010. <http://ipsnews.net/news.asp?idnews=50449>.

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for such projects.” While it is likely that some new nuclear plants will begin construction and a small number of CCS pilots will be undertaken in the near term, it will be at least a decade before utilities will be able to confidently pursue development of these resources on a large scale.

Individually, each of these trends creates a degree of uncertainty for electric utilities and the power sector. Combined, they signal a major shift in the landscape of the 21st century power sector. The following report discusses what electric utilities can do to be successful in this new environment.

II. Five Key Elements of a 21st Century Utility Business Model

1 Manage Carbon Across the Enterprise

The discussion surrounding climate change legislation has matured to the point where federal action designed to limit greenhouse gas (GHG) emissions is likely in the near term. Numerous state and regional policies have already emerged. Most utilities are now thinking about climate change, and commitments to clean energy and environmental stewardship are increasingly common. In addition to reliable, affordable electricity, many utilities have added “clean” to their long-term strategic objectives.

National Grid's Approach to Carbon Management

National Grid presents a good example of how a utility can integrate carbon costs into its business operations. In 2008, National Grid set a long-term target to reduce its Scope 1 and Scope 2 GHG emissions by 80 percent by 2050. The company also discloses a shorter-term reduction target of 45 percent by 2020. The timeframes and magnitude of these goals are closely aligned with reduction goals from the scientific community.

The utility company's executives have been using a shadow price for carbon of \$50 per ton in its business decisions and planning. Carbon budgets have been established by business lines, and incentive compensation for executives is linked to achieving carbon reductions.

Truly managing the financial risk associated with carbon will require more than acknowledgement that it is important. Utilities should account for carbon emission costs in their resource planning and properly and fully recognize the costs and risks associated with likely scenarios for carbon reduction.⁹ Further, the likelihood that coal-fired power generation will become a more expensive and less integral part of baseload generation in the coming years should be a key consideration as utilities map next steps.

While some utilities are beginning to account for carbon risk in their planning, other utility executives and analysts believe that the uncertainty around pending legislation is so great that the value of planning and analysis is quite limited. Uncertainties aside, the lack of a robust and consistent response by utilities to carbon-related financial risks has raised concerns among some financial analysts; as Moody's observed in a February 2010 report, “The electric utility sector does not appear to be responding to the potential climate risks with any sense of urgency,

and some companies may find themselves unprepared for legislative changes. We think preparations to strengthen the balance sheet should have begun years ago, and worry that the opportunity costs associated with inaction may yet prove substantial.”¹⁰

The Legislative and Regulatory Context

A number of federal bills have been introduced that aim to reduce GHG emissions using cap-and-trade or cap-and-dividend approaches (Figure 1). The most prominent of these are the American Clean Energy and Security (ACES) Act of 2009 (H.R. 2454), which was passed in the House in June 2009, and the American Power Act “discussion draft,” which was introduced by Senators Kerry and Lieberman into the Senate in May 2010. Although the details of the various bills differ, most have proposed similar reductions in GHG emissions, which are significant (83 percent reduction by 2050).

9. “Influence of Retail Market Structure on Financial Impacts of Multi-Pollutant Bills at the Company Level,” Kevin Cooney, James Henderson and Robert Repetto, Electric Utilities Environmental Conference, Tucson, AZ, January 20, 2004.

10. Moody's Investors Service, “U.S. Electric Utilities See Some Clarity in Evolving Federal Energy Policies,” February 2010.

II. Five Key Elements of a 21st Century Utility Business Model

States and regional entities are already limiting greenhouse gas emissions from electric power plants, creating a patchwork national market in the absence of federal legislation. Multi-state utilities already face management challenges and associated costs from these varying regulatory environments. Eighteen states have taken initial steps toward GHG trading systems, including the Western Climate Initiative, California's Global Warming Solutions Act, Florida's State Action Team on Energy and Climate, and the Regional Greenhouse Gas Initiative in the Northeast (Figure 2).¹¹

Several states, including California, Montana, Oregon and Washington, have passed laws that prohibit utilities from building or signing long-term contracts with new coal generation without carbon sequestration, and that require new plants to offset some of their projected CO₂ emissions.¹²

With national climate and energy legislation in process and a patchwork of state and regional efforts advancing in the meantime, it is inevitable that all utilities will have to deal with such a system in the future, and probably within their timeframe of their planning horizons. However, the details of climate change proposals can take many forms, and until such details are fully in place, significant implementation uncertainties will remain. A utility will

Net Estimate of Emissions Reductions Under Pollution Reduction Proposals in the 111th U.S. Congress, 2005-2050 June 8, 2010

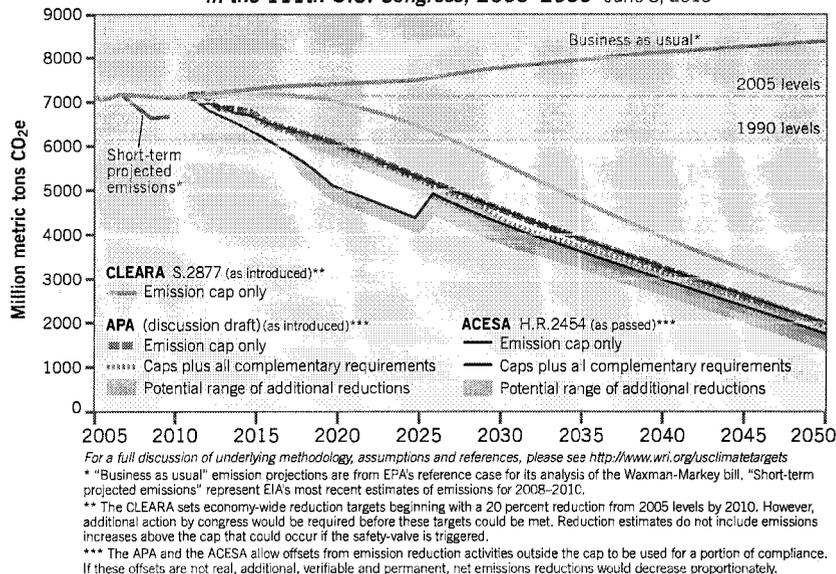


Figure 1: CO₂e Emission Reductions Required by Waxman-Markey, Kerry-Boxer, Cantwell-Collins, and Kerry-Lieberman
 Source: World Resources Institute

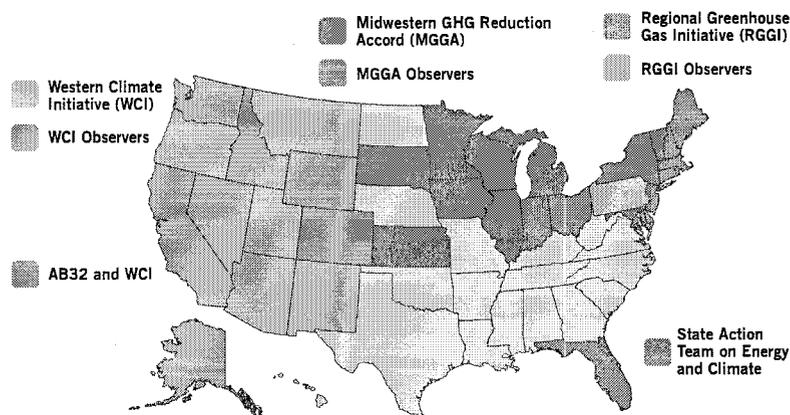


Figure 2: State and Regional Programs Involving CO₂ Emissions Trading
 Source: Navigant Consulting, Inc.

11. "Uncovering the Full Renewable Energy Potential," renewable Energy World Conference & Expo, Navigant Consulting Pre-Conference Workshop, March 2009.
12. California Senate Bill 1368 prohibits the state's utilities from taking new ownership interest in, or signing new contracts of five years or longer for baseload generation with a CO₂ emission rate exceeding that of a combined-cycle natural gas unit. Washington Senate Bill 6001 includes similar restrictions. Montana House Bill 25 prohibits the state PUC from approving a utility application to lease/acquire an equity interest in a coal plant constructed post-2006, unless it has at least 50 percent capture and storage of CO₂, and requires use of cost-effective carbon offsets if leasing/acquiring an equity interest in a power plant fueled by natural or synthetic gas and constructed after 2006. Oregon HB 3283 requires that new baseload gas generation and new non-baseload generation mitigate projected CO₂ emissions in excess of a specified level. Washington HB 3141 is similar.

II. Five Key Elements of a 21st Century Utility Business Model

need to use rigorous risk management approaches to be best prepared for a range of scenarios. Elements within the proposed national cap-and-trade systems are outlined in Table 1.

Key Design Variables of Cap-and-Trade Systems That May Vary with Legislation

Emissions Cap	<ul style="list-style-type: none"> • The level of the system cap • Timing of reduction of cap
Allowances	<ul style="list-style-type: none"> • How allowances will be allocated, and who they will be allocated to • Which types of utilities will be held responsible to the trading system, and how their requirements will differ • Amount of banking / borrowing allowed in trading system
Offsets	<ul style="list-style-type: none"> • Criteria for determining legitimate sources of carbon offsets • Amount of offsets, both domestic and international, allowed in the system
Interaction with Existing Systems	<ul style="list-style-type: none"> • Links to other trading systems, such as the European Union Greenhouse Gas Emission Trading System (EU ETS) • Interaction of a national cap-and-trade with existing state or regional systems.

Table 1: Key Design Variables of Cap-and-Trade Systems (Varying with Legislation)

As the costs, complexity, and effectiveness of a market-based system are debated, the Environmental Protection Agency (EPA) has also been proceeding with GHG regulation under the Clean Air Act (CAA). This authority is based on a 2007 Supreme Court ruling allowing EPA to use the Clean Air Act to regulate GHG emissions.¹³ Utilities may be exposed to GHG regulatory risk stemming from the CAA.

Effective Carbon Management

While the details of eventual federal, state and regional clean energy regulations will influence their impact, utilities will increasingly need to manage carbon emissions with a focus on the financial liabilities associated with these emissions. For example, analysis by Standard & Poor's (S&P) suggests that companies with carbon intensive generation portfolios could face negative earnings impacts of between 10 and 20 percent.¹⁴ Electric utilities should view this imperative alongside other issues facing the industry such as grid integration of variable generation, transmission constraints, uncertain demand growth and differing electricity market structures – all of which can influence generation and portfolio planning and resource choices. Moreover, uncertain fuel (and carbon) prices, uncertain responses from regulators who set rates, different cost trajectories for renewable energy technologies and localized siting/permitting bottlenecks for new projects can further complicate strategic decisions on precisely how to cost effectively lower carbon emissions.

Suboptimal decision-making processes on carbon mitigation can lead to higher risks for shareholders and lenders as well as unreasonably burdening ratepayers with higher costs. In a carbon-constrained economy, capital providers and utility commissions will increasingly

13. *Massachusetts v. Environmental Protection Agency*, 549 U.S. 497 (2007)

14. Standard and Poor's, "How Cap-And-Trade Will Affect U.S. Power Markets and Merchant Generators Profitability," September, 2009.

II. Five Key Elements of a 21st Century Utility Business Model

examine generation and fuel portfolios to evaluate risk associated with potential new regulations. The complexity of this new regulatory situation is highlighted in Figure 3, although by no means does this graphic represent an exhaustive list of financial issues arising from carbon emissions.

The financial community is increasingly aware of the risk that carbon-emitting generation represents in the energy portfolios of utilities. However, it does not appear that a consistent means for valuing that risk has been developed. While regulatory uncertainty makes it challenging to definitively assess carbon risk, analysts and utilities should still be performing extensive scenario analysis to help guide decision-making. Existing frameworks, such as the Carbon Principles' Enhanced Environmental Due Diligence, could be useful for supporting such analysis.

It is essential that utilities account for the cost of carbon in their resource planning. Even though the details of legislation could significantly influence the ultimate carbon price, accounting for a range of potential carbon costs will lead to more prudent decision-making.

The results of a Lawrence Berkeley National Laboratory study¹⁵ of utility practices for quantifying carbon financial risks indicate that the best-equipped utilities will have planning scenarios that include:

- the most likely future regulatory outcomes;
- a wide range of possible carbon prices;

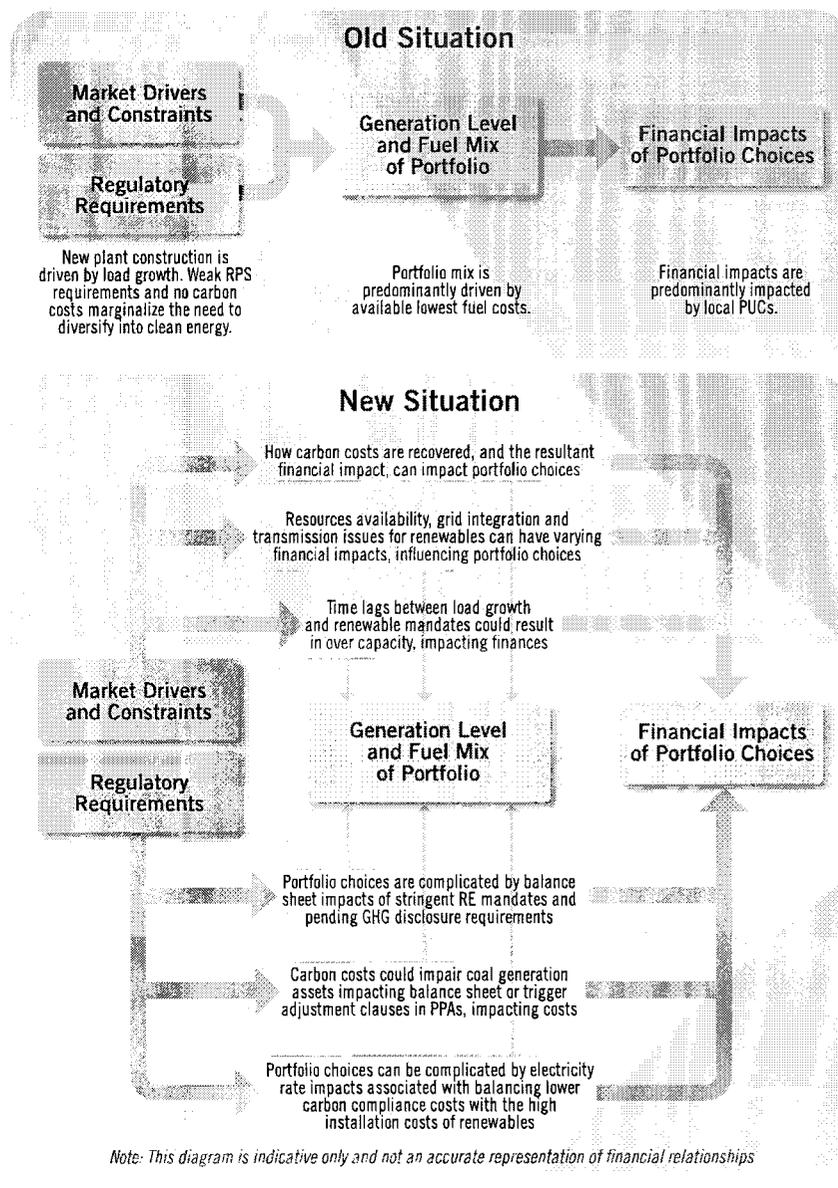


Figure 3: Graphical Representation of Current and Future Relationships between Portfolio Drivers and Financial Impacts

Source: Navigant Consulting, Inc.

15. Managing Carbon Regulatory Risk in Utility Resource Planning: Current Practices in the Western United States, Galen Barbose, Ryan Wiser, Amol Phadke, and Charles Goldman, Ernest Orlando Lawrence Berkeley National Laboratory, March 2009.

II. Five Key Elements of a 21st Century Utility Business Model

- a diverse set of low-carbon portfolios capitalizing on energy efficiency and renewable resources;
- 10–20 year time horizons;
- potential indirect effects of carbon regulation;
- accounting for risks attributable to uncertainty in future technology costs; and
- the value of emissions avoided through EE and reduced carbon regulatory risk.

Long-Term Planning with Carbon Scenarios

The resource planning process at PacifiCorp, an Oregon-based utility, provides an example of robust planning that can curb carbon risk. The process includes a range of carbon prices, a long-term outlook, and potential indirect effects of carbon regulations in support of portfolio development. The company also accounted for EE in their candidate portfolios, incorporating their base case carbon prices into their assessment of EE cost effectiveness. The Oregon PUC required PacifiCorp to include carbon costs in their planning and helped to shape how the utility accounted for carbon in its planning process.

PacifiCorp identified a broad range of candidate portfolios, some of which included planning horizons out to 2026. Many portfolios included a resource mix that exceeded Oregon's current renewable portfolio standard (RPS) targets. Potential indirect effects of carbon regulations included the impacts on electricity market prices, natural gas prices, air pollutant permit prices, and regional generation expansion. Product cost models were developed to create electricity price forecasts for each scenario.

Finally, PacifiCorp used a capacity expansion model to determine how resources performed across carbon scenarios, helping them to more transparently and accurately incorporate carbon into the portfolio selection process. A threshold analysis was used to determine a carbon price point at which a candidate portfolio would become the preferable least-cost option. This approach allows the utility to consider the probability of carbon prices reaching a point with major implications for the composition of the least-cost portfolio.

Utilities should measure their carbon footprint in detail to fully understand their exposure. Existing reporting standards – such as EPA's GHG Reporting program, the Global Framework for Climate Risk Disclosure, the Carbon Disclosure Project, and the Greenhouse Gas Protocol¹⁶ – can help utilities achieve this goal within an accepted framework.

Along with a rigorous accounting for carbon cost, setting a target for GHG reductions is important. Once a target is established, utility managers can develop long-term action plans across various business units that will contribute to achieving the reduction. Building carbon reductions into business operations frameworks will also help foster innovation around practices for achieving targets. Many utility companies, including American Electric Power, Entergy, Duke Energy, Exelon, National Grid, Consolidated Edison, Xcel Energy, PSEG, NiSource, and Pinnacle West, have already set absolute or intensity targets. Many of these companies cite multiple benefits of setting GHG reduction targets, including improved operational efficiencies, preparedness for emerging regulations and enhanced standing with key stakeholders.

It is critical that utilities capably manage carbon across their enterprise, and properly account for carbon exposure in their business planning. Given the challenges related to regulatory and financial uncertainties, utilities can begin to account for carbon exposure by

16. The Greenhouse Gas Protocol (GHG Protocol) is an international accounting tool for government and business leaders to understand, quantify, and manage greenhouse gas emissions. The GHG Protocol is a decade-long partnership between the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD). www.ghgprotocol.org.

II. Five Key Elements of a 21st Century Utility Business Model

establishing a shadow carbon price for planning purposes. Furthermore, utilities should develop and analyze scenarios to explore the impacts of variations in carbon regulation and market conditions to inform decisions throughout the enterprise, not just around generation or supply procurement. This will allow the utility to include “carbon externalities” as it conducts its future planning, as well as develop ways to reduce its carbon exposure. Finally, utilities should develop carbon-related risk management competencies and fully incorporate these into the company’s enterprise risk management (ERM) approach.

In summary, to effectively manage carbon, utilities should:

- Make an overall corporate commitment to minimize carbon emissions as a central guiding policy;
- Perform rigorous scenario analysis that assumes a range of carbon costs;
- Incorporate carbon prices into business and energy resource plans;
- Complete an internal inventory of GHGs using widely accepted standards;
- Set a meaningful GHG reduction target that will help prepare the company for future regulation; and
- Disclose relevant data and plans thoroughly to stakeholders.

2 Pursue All Cost-Effective Energy Efficiency

Energy Efficiency (EE) is a critical mechanism for reducing energy consumption, maintaining system reliability and reducing GHG emissions. In addition, energy efficiency is often the cheapest source of energy for utilities. The Institute of Electric Efficiency (IEE), created by the Edison Electric Institute in 2008, calls EE the “first fuel” for the industry. IEE states that EE is a cost-effective way to reduce carbon emissions and moderate electricity demand growth.¹⁷ A recent report backed by the U.S. Department of Energy (DOE) and U.S. Environmental Protection Agency (EPA) indicates that EE should be a key component of any national climate policy because it is a low-cost way to reduce GHG emissions, and consequently helps minimize the overall economic impact of climate action.¹⁸

Exelon’s 2020 Low Carbon Roadmap

After far surpassing its initial goal of reducing GHG emissions by 8 percent from 2001 to 2008 (and actually achieving a 38 percent reduction), Exelon committed to a new 2020 goal. The Illinois-based utility now aims to reduce, offset or displace more than 15 million metric tons of greenhouse gas emissions per year by 2020, roughly the same amount that the power company emitted in 2001.

Exelon’s three-pronged strategy for achieving comprehensive GHG reductions:

1. Reduce or offset its carbon footprint by greening operations
2. Help customers and communities reduce their emissions
3. Offer more low-carbon electricity in the marketplace

The strategy is predicated on a comprehensive economic analysis of the GHG abatement options available to the company.

17. “Impact of Energy Efficiency and Demand Response on Electricity Demand, Perspectives on a Realistic United States Electric Power Generation Portfolio: 2010 to 2050,” Lisa Wood, Executive Director, Institute for Electric Efficiency, October 26, 2009.

18. “Energy Efficiency as a Low-Cost Resource for Achieving Carbon Emissions Reductions,” National Action Plan on Energy Efficiency, September 2009.

II. Five Key Elements of a 21st Century Utility Business Model

Energy efficiency portfolios typically save electricity at a cost of about 3 cents per kWh, which is roughly two to three times less expensive than many supply-side resources (Figure 4).

In addition to its advantage as the lowest-cost energy resource, energy efficiency provides numerous benefits to utilities and customers. The National Action Plan on Energy Efficiency (NAPEE) – a consensus-based

initiative involving dozens of power sector, regulatory, consumer and industry representatives launched in 2006 by DOE and EPA – points out the following energy efficiency benefits:

- Lower energy bills, greater customer control, and greater customer satisfaction
- Modular and quick to deploy
- Environmental benefits from reduced fuel consumption (including reduced air pollution, GHG emissions, water consumption, and environmental damage from fossil fuel extraction)
- Economic development
- Energy security

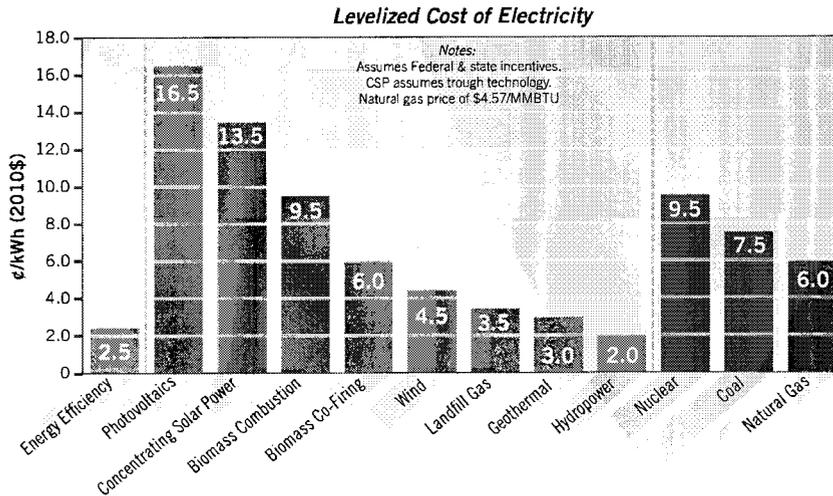


Figure 4: Cost of EE as Compared to Other Resources
Source: Navigant Consulting, Inc. 2010

Some states have been implementing successful EE measures for years. The State Energy Efficiency Scorecard produced by the American Council for an Energy Efficient Economy (ACEEE) ranks states in six categories related to energy efficiency. Table 2 shows the top 10 states as ranked according to ACEEE's six categories, along with their associated electricity savings. As shown in the table, leading states have been able to achieve EE savings of 1 percent or more of electricity sales per year.

Top Ten States Based On ACEEE's State Energy Efficiency Scorecard	
2009 Rank (2008 savings*)	2008 Rank (2007 savings*)
1. California (1.3%)	1. California (1.3%)
2. Massachusetts (0.86%)	2. Oregon (0.90%)
3. Connecticut (1.1%)	3. Connecticut (1.1%)
4. Oregon (0.90%)	4. Vermont (1.8%)
5. New York (0.36%)	5. New York (0.36%)
6. Vermont (1.8%)	6. Washington (0.74%)
7. Washington (0.74%)	7. Massachusetts (0.86%) & Minnesota (0.68%) (tie)
8. Minnesota (0.68%)	9. Wisconsin (0.66%)
9. Rhode Island (0.81%)	10. New Jersey (0.30%)
10. Maine (0.91%)	

Table 2: Top States in Energy Efficiency Based On ACEEE Scorecard
*Savings as a percent of electricity sales. Source: ACEEE

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While leading states have tended to be located on the coasts (as Table 2 indicates), EE is gaining traction across the country. Less experienced states are now taking ambitious steps toward implementing large-scale EE programs. Ohio and Indiana, for example, adopted identical energy savings targets in 2009 ramping up to 2 percent of annual electricity sales by 2019, ranking among the most aggressive targets in the nation.

But even states with long track records on EE continue to make significant strides. For example, Massachusetts finalized plans in January 2010 to make EE its “first fuel,” with the state’s Department of Public Utilities calling on electric and gas utilities to invest \$2.2 billion aimed at saving customers \$6 billion in energy costs. The plan establishes electricity savings targets for utilities that reach up to 2.4 percent of annual sales by 2012, amounting to 2,600 GWh of cumulative electricity savings by that time. By 2020, the plan calls for 30 percent of the state’s electricity demand to be met by EE.

Analysis by Navigant Consulting indicates that the utility EE programs that achieve the highest levels of energy savings also deliver EE at the lowest cost, suggesting that energy efficiency becomes less expensive as utilities use it more widely (Figure 5). After ranking utility EE programs in deciles based on 2007 electricity savings, Navigant Consulting looked the top five deciles and compared how much energy was saved with how much it cost utilities to save it. The top decile of utilities saved energy equal to 1.4 percent of their sales at an average utility¹⁹ levelized cost of less than 2 cents per kWh saved.

Because EE is the lowest-cost energy resource, successful energy efficiency programs lower customer electricity bills. The Northwest Power and Conservation Council, whose ambitious EE programs save 35,000 GWh annually and in 2008 delivered consumer savings of

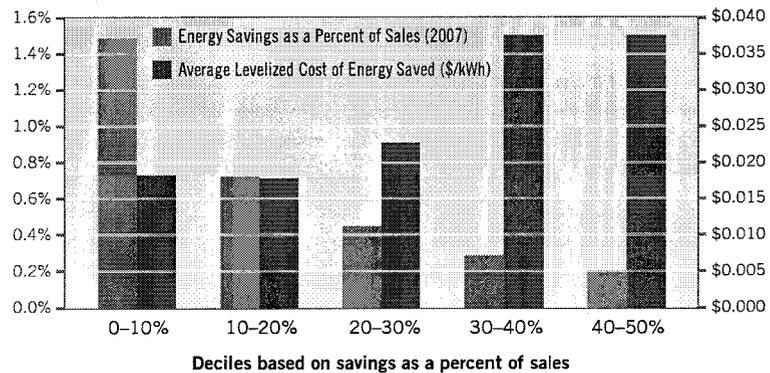


Figure 5: Cost of Energy Saved and Savings as a Percent of the Utility's Sales
Source: EIA, Navigant Consulting analysis

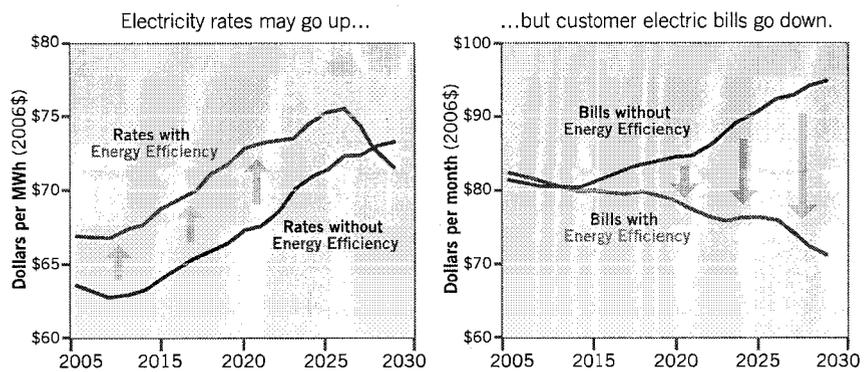


Figure 6: Energy Efficiency Increases Rates, but Decreases Bills
Source: Tom Eckman, Northwest Power and Conservation Council, BPA Utility Energy Efficiency Summit, March 17, 2010, and Navigant Consulting analysis.

19. Utility cost of energy saved includes the utility program management and administration costs and the incentives provided to customers. The incentives often cover only a portion of the total cost of the measure.

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roughly \$1.8 billion, has demonstrated that while the cost of energy efficiency programs may slightly increase electricity *rates*, the resultant reductions in energy consumption will decrease customer electricity *bills* (Figure 6).²⁰

Furthermore, studies suggest that consumer savings increase as the magnitude of EE investment increases. Analysis conducted during the development of the Regional Greenhouse Gas Initiative (RGGI) in the Northeastern U.S. indicated that doubling EE spending in the region could yield average energy bill savings of 4.7 percent for industrial customers and 12.4 percent for residential customers by 2021 relative to the reference case.²¹ Again, while per-kWh rates would increase slightly, the number of kWh used by customers would decrease as would their bills.

EE is certainly not a new concept. For decades, government and utilities have supported

EE through appliance and lighting programs, weatherization, and customer education. Some utilities and states have gone further; for example, California places EE at the top of its "loading order" of energy resources.²² As of January 2010, 22 states had legislated some sort of energy savings goals or Energy Efficiency Resource Standards (EERS), and four others have a pending EERS (Figure 7).²³

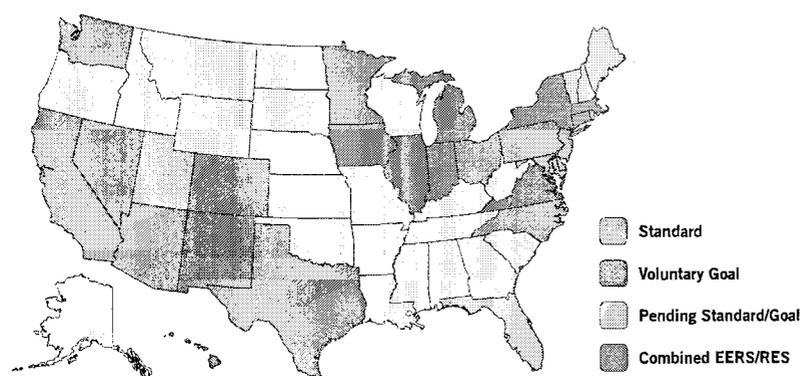


Figure 7: States with Energy Efficiency Resource Standards (January 2010)

Source: ACEEE

Like any energy resource, EE is not without challenges. Disparities among states in reporting program costs and energy savings makes it

difficult to measure EE results achieved in comparable terms. Also, determining the baseline against which results will be measured can be difficult and varies among utilities and states. Program results are typically reported by estimating the amount of energy savings that various types of equipment will deliver, with state commissions increasingly requiring Monitoring and Verification (M&V) of savings.²⁴ Effective M&V is a critical factor in increasing the implementation of EE across the U.S.

20. Tom Eckman, Northwest Power and Conservation Council.

21. "Energy Efficiency's Role in Limiting RGGI Leakage," Bill Prindle, ACEEE, June 15, 2006. www.rggi.org/docs/prindle.ppt

22. Preferred resources in California's loading order are energy efficiency, demand response, renewables, distributed generation and clean and efficient fossil fuel generation.

23. American Council for an Energy-Efficient Economy, March 2009. <http://www.aceee.org/energy/state/policies/4pgStateEERSsummary.pdf>

24. While different states have different M&V protocol requirements, the industry trend is to require use of standard protocols developed and used in many states and regions. Procedures for monitoring and evaluating the MW/MWh impacts of EE programs generally build on the requirement of the International Performance Measurement and Verification Protocol (IPMVP).

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The benefits of EE are clear, including lower electricity cost to consumers, less consumption of CO₂ emitting fuel for generation, and less need for physical delivery infrastructure. The problem, however, is that the traditional utility business model involves supporting tremendous fixed capital costs with revenues collected by selling kWh to customers. Even small reductions in sales can disproportionately harm utility earnings; analysis commissioned by the Minnesota Public Utilities Commission illustrates that a one percent decline in sales can reduce earnings by about 10 percent for distribution-only utilities and 7 percent for vertically-integrated utilities.²⁵ Therefore, while utilities have offered EE programs for a long time, most have been doing so from a conflicted position.

Some utilities have indicated that, with the right policy mechanisms in place, implementing EE is a financially safe proposition. **Revenue decoupling** (or simply “decoupling”), discussed in more detail later in this report, is one such mechanism. Decoupling ensures that a utility recovers exactly its commission-approved rate of return regardless of sales fluctuations, thereby severing the link between sales and profits. This allows the utility to pursue large-scale EE programs without threatening profitability, and to support the suite of public policies (including building codes and appliance standards) required to realize energy efficiency at scale. California's decoupling program is a key reason why the state's per capita power consumption has remained flat since the mid-1970s while the rest of the U.S. has seen a doubling in energy use.

By itself, decoupling does not provide utilities with adequate financial incentive to aggressively pursue EE. Approaches to financial incentives vary, but once a policy is in place to protect the utility from declining sales it is generally recognized as best practice to reward utilities for performance towards an energy savings target, with the richest incentives being reserved for exemplary performance.²⁶

Key Features of an EE Program

The EE model being pursued by Idaho Power Company has produced promising results at a low cost. The program combines three important features: funding, decoupling, and performance incentives. Through its program, the utility reduced total sales by 0.5 percent at a cost of 1.8 cents per kWh in utility expenditures.

Key features of the program include:

- A rider for EE of 1.5 percent of base revenue, producing about \$8.5 million annually;
- A Fixed Cost Adjustment to offset revenue reductions due to lost sales; and
- A “Performance-Based DSM Incentive” to reward the company for exceeding program goals, and penalize it for failing to meeting those goals.

The Fixed Cost Adjustment and Performance-Based Incentive were instituted together at the beginning of 2007 as part of a decoupling pilot program involving the Residential Service and Small General Service (commercial) customer classes. The program has been monitored closely by the Commission staff and other parties.

All of Idaho's major utilities use riders to fund EE, ensuring that program money is available to make EE investments. This program takes the next step by providing the decoupling mechanism that removes the financial disincentive to investing in EE. Finally, the program provides the utility an opportunity to be rewarded for performance.

25. Regulatory Assistance Project, “Revenue Decoupling: Standards and Criteria,” Report to the Minnesota Public Utilities Commission, 30 June 2008.

26. National Action Plan on Energy Efficiency, “Aligning Utility Incentives with Investment in Energy Efficiency,” November 2007.

II. Five Key Elements of a 21st Century Utility Business Model

There are three key elements for incentivizing energy efficiency for investor owned utilities (Figure 8):

- Program cost recovery;
- Lost margin recovery; and
- Performance incentives.

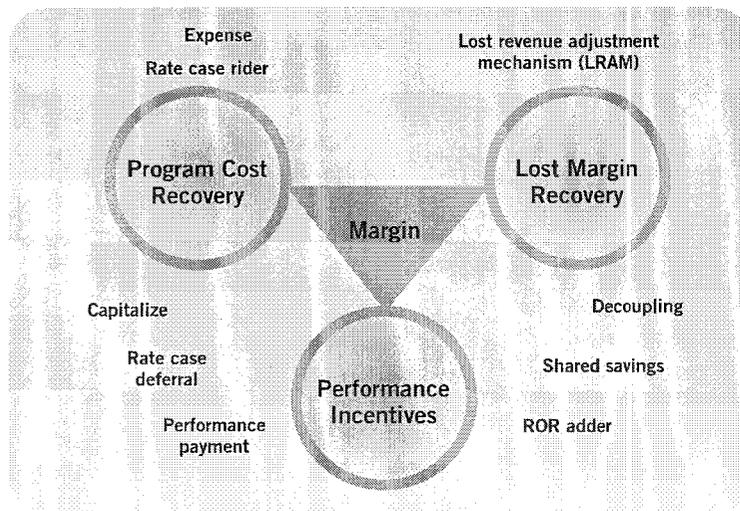


Figure 8: Elements for Incentivizing EE for Investor Owned Utilities

Source: National Action Plan for Energy Efficiency, November 2007

These elements can be achieved by utilizing a number of mechanisms including:

- Tariff riders for energy efficiency expenses;
- Capitalizing or rate basing energy efficiency investments;
- Lost revenue adjustment mechanism (LRAM);
- Decoupling;
- Shared savings;
- Performance payments; and
- Rate of return adders.

It is also important that customers receive proper education about energy efficiency programs and their benefits. This helps the utility

achieve greater market penetration with its energy efficiency programs, and helps customers understand potential cost savings as well as the relevancy of energy efficiency to distributed generation investment decisions.

In summary, to pursue all cost-effective energy efficiency, utilities should:

- Recognize the value of energy efficiency;
- Actively seek out lessons learned and best practices from other jurisdictions;
- Advocate for appropriate policies that support aggressive energy efficiency;
- Develop goals that aim for at least 1% annual electricity savings, consistent with results achieved by leading utility programs;
- Fully include energy efficiency in electric system resource planning; and
- Follow rigorous and transparent M&V protocols.

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3 Integrate Cost-Effective Renewable Energy Resources into the Generation Mix

A confluence of factors has made the U.S. one of the strongest and most attractive renewable energy (RE) markets in the world – an important trend given the need to reduce the power sector’s carbon footprint. Figure 9 illustrates the drivers that are stimulating the U.S. renewable energy market.

Improvement in the economics of renewable energy relative to the market price of electricity will continue to result in significant additions of renewable energy to many generation portfolios. Technologies such as wind power are currently price-competitive with natural gas-fired power in locations with strong wind resources (Wind Power Class²⁷ 4 or better). In 2009, wind generation represented 39% of all new generating capacity installed, regardless of type.²⁸ Other renewable energy technologies such as landfill gas, solar thermal, biomass and geothermal are also at or near competitive pricing levels (Figure 10). With continued downward movement in price expected across most renewable energy sectors and upward pressures sustaining or increasing fossil generated power costs, simple operating economics will become an increasingly powerful driver over the near term.

Another key driver behind the large-scale adoption of renewable energy has been public policy, including incentives and Renewable Portfolio Standards (RPS). As of February 2010, 29 states and Washington D.C. had RPSs, and six states had renewable portfolio goals (Figure 11). If met in their entirety,



Figure 9: Renewable Energy Market Drivers in the U.S.
Source: Navigant Consulting, Inc.

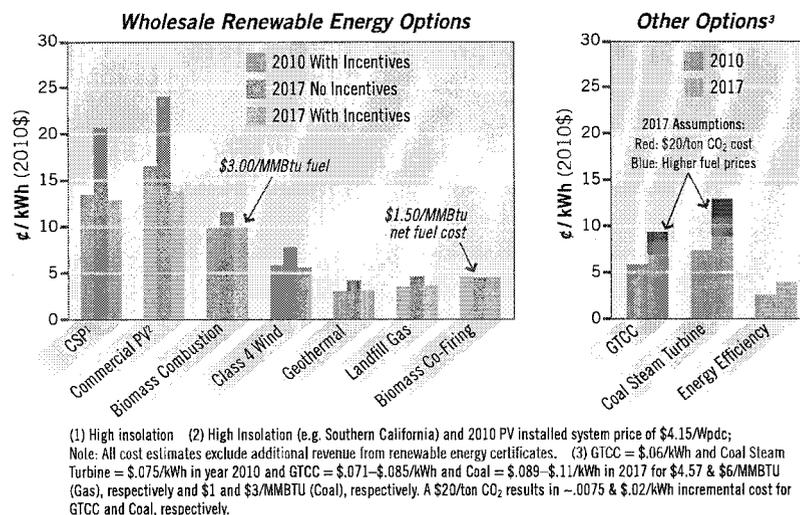


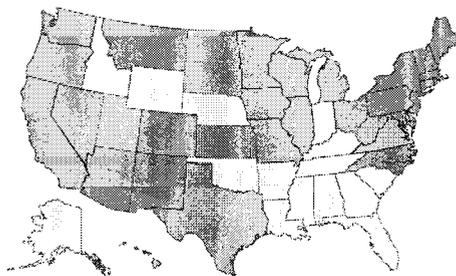
Figure 10: Typical Levelized Cost of Electricity for Selected Wholesale RE Resources, Developer Financed
Source: Navigant Consulting, Inc.

27. "Basic Principles of Wind Resource Evaluation," American Wind Energy Association, <http://www.awea.org/faq/basicwr.html>

28. AWEA U.S. Wind Industry Annual Market Report, Year Ending 2009.

II. Five Key Elements of a 21st Century Utility Business Model

RPS Targets	
AZ	15% by 2025
CA	33% by 2020
CO	30% by 2020 (IOUs), 10% munis and co-ops
CT	23% by 2020
DC	20% by 2020
DE	20% by 2019
HI	40% by 2030
IA	105 MW (2% by 1999), add'l 1000 MW goal by 2011
IL	25% by 2025
KS	20% by 2020
MA ¹	15% by 2020 (+1%/year after for tier 1; 3.6% tier 2)
MD	20% by 2022
ME ²	10% additional by 2017 class 1
MI	10% +1,100 MW by 2015
MN	25% by 2025, (Xcel 30% by 2020)
MO	15% by 2021
MT	15% by 2015
NC	12.5% of 2020 sales by 2021 (IOU), 10% of 2017 sales by 2018 (muni/co-op)
ND	10% by 2015 goal
NH	23.8% by 2025
NJ	22.5% by 2021
NM	20% (IOUs), 10% (co-ops) by 2020
NV	25% by 2025
NY	24% by 2013
OH	25% by 2025
OR	25% (large utilities), 5%–10% (small utilities) by 2025
PA	18% in 2020
RI	16% by 2020
SD	10% by 2015 goal
TX	5,880 MW by 2015
UT	20% by 2025 goal
VA	15% of 2007 sales by 2025 goal
VT	Energy growth 2005–2012 goal met by RE; 20% RE & CHP by 2017
WA	15% by 2020
WI	10% by 2015
WV	25% by 2025 (RE & Alt E) goal



1. MA has enacted an additional Alternative Energy Portfolio Standard of 5% by 2020 and an added 0.25% of sales each following year. Eligible technologies include CHP, gasification with CO₂ capture, and flywheel energy storage among others.
2. ME has a goal of at least 3,000 MW of installed wind capacity by 2020.
3. Guam has enacted an RPS goal of 25% by 2035.

Figure 11: Renewable Energy Market Drivers in the U.S.
Source: January 2010, Database of State Incentives for Renewable Energy (DSIRE)

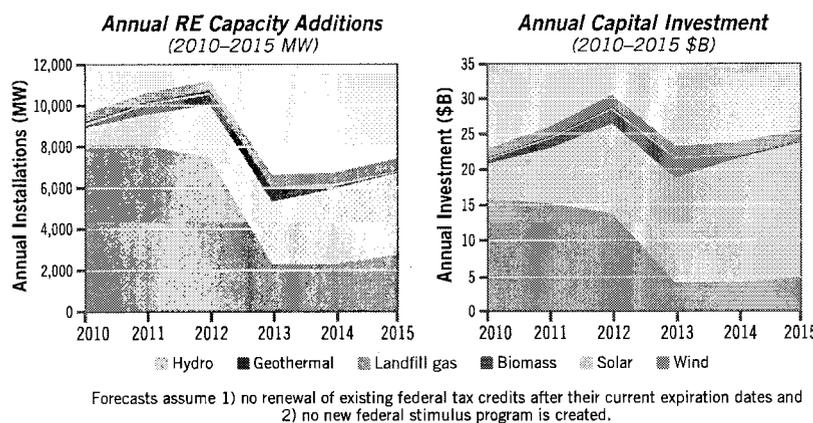


Figure 12: Expected Future Growth of Renewable Energy in the U.S.
Source: Navigant Consulting, Inc.

existing state targets would require 122.2 GW of renewable energy, or 330% of existing wind and solar capacity, by 2020. Furthermore, Congress is considering national renewable energy standards that would encourage development of renewable technologies in every state in the U.S.

The improving competitiveness of renewable energy generation has benefited from the challenges facing traditional forms of generation. In the last year, there is evidence that developing large coal and nuclear generation may have a negative impact on utility credit ratings. Recently, Moody's indicated that ratings pressure is increasing on utilities seeking to build nuclear plants, and characterized nuclear generation development as having "bet-the-farm risk."²⁹ More than 120 proposals for new coal-fired power plants have been withdrawn since 2000 due to concerns about environmental and financial risks, while another 50 face continued legal opposition.³⁰ Given these challenges, utilities can be expected to seek alternative strategies, including increased renewable energy access, to meet anticipated future demand.

Navigant Consulting expects significant growth in the U.S. for solar technologies and some other renewable energy technologies over the next few years (Figure 12). As this figure indicates, the expiration

29. "New Nuclear Generation: Ratings Pressure Increasing," Moody's Global Infrastructure Finance, June 2009

30. Lester Brown, "Coal-Fired Power on the Way Out?," 24 Feb 2010. <http://ipsnews.net/news.asp?idnews=50449>.

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of the current federal Production Tax Credit (PTC) in 2013 would have a strong negative impact on the continued strong growth of wind power. If the PTC is extended again in 2013, wind growth is likely to continue to be strong beyond 2012.

Utility-scale wind plants are currently the leading source of renewable energy based on installed capacity. By the end of 2009, the wind industry had installed over 35,000 MW cumulatively in the U.S., approximately 10,000 MW of which – roughly 28 percent of the total – was installed in 2009 alone. Although some utilities and grid operators have had concerns about how large wind generation growth could impact grid operations, to date the increasing levels of wind generation have not posed any major grid performance issues.

Colorado's governor recently signed a law requiring investor-owned utilities to source 30 percent of their electricity from renewables by 2020. In California, lawmakers are considering legislation that will raise the state's RPS from 20 percent by 2010 to 33 percent by 2020. Achieving this target using large-scale renewables would require significant new transmission capacity, currently one of the major barriers to central renewable energy development throughout the U.S. The siting, permitting, and cost of new transmission infrastructure is likely to impede large-scale development of remotely-located renewable energy resources. To mitigate the risk involved with new transmission development, California is leading a number of states in examining the potential for distributed energy resources (DERs), especially solar PV.

A growing number of utilities are pursuing large-scale installations of distributed PV. While the configurations of these systems vary, a common characteristic is utility ownership and rate-basing of the capital investment (Figure 13).

Utilities are gaining interest in solar PV for a variety of reasons such as RPS compliance, grid

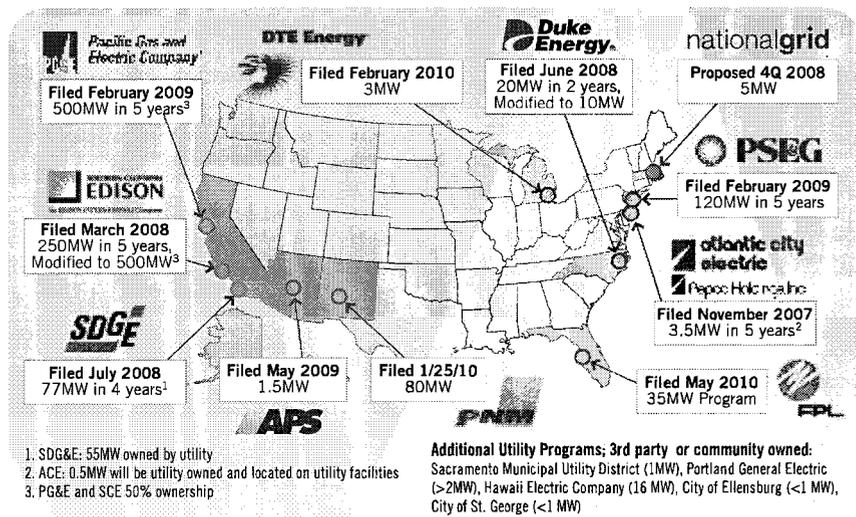


Figure 13: Utility Programs for Distributed Solar – Examples of Filings for Rate Basing

Source: Navigant Consulting, Inc.

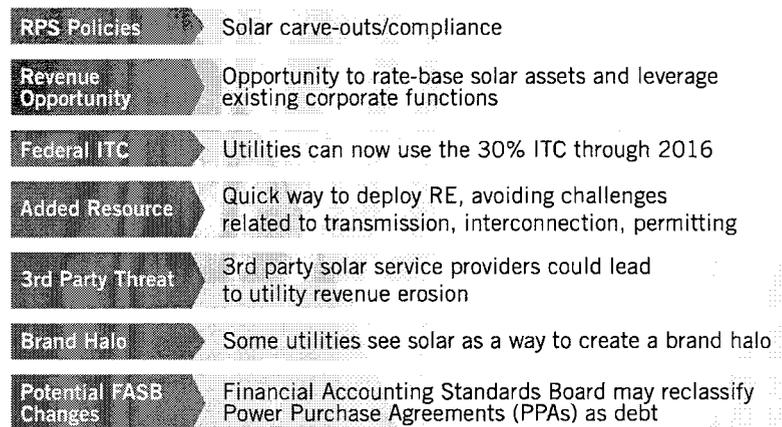


Figure 14: Key Drivers of Utility Ownership of PV

Source: Navigant Consulting, Inc.

II. Five Key Elements of a 21st Century Utility Business Model

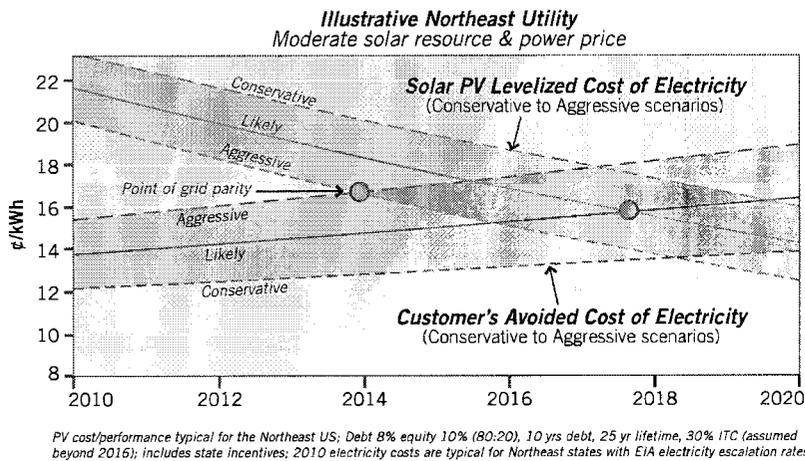


Figure 15: Levelized Cost of Electricity (LCOE) vs. Avoided Cost of Electricity for a Typical Northeast Utility (Real terms)

Source: Navigant Consulting, Inc.

Utility Ownership of PV

Earlier this year, Southern California Edison (SCE) received approval by the California Public Utilities Commission to build and own up to 250 MW of solar PV capacity and to execute contracts for up to 250 MW for generation from similar facilities owned and maintained by Independent Power Producers (IPP) through a competitive solicitation process.

Motivation for the program includes:

- RPS compliance without additional transmission construction;
- Helps to reduce system load peaks; and
- Fills a gap in the California Solar Initiative program that targets applications less than 1 MW and an RPS that targets multi-MW systems.

Target locations for PV installation include large commercial, institutional, and industrial rooftops sufficient to support 1–2MW installations.

Up to 10 percent of the systems will be ground mounted. SCE will own 50 percent of the installed PV, and 50 percent will be customer owned. Customer owned systems will be determined through a competitive bid with 20 year Power Purchase Agreements.

The program is limited to 500 MW of PV at cost cap of \$963 million. IPP bids will be capped at \$260/MWh. Funding for the program will come from SCE ratepayers, including 100 percent of reasonable startup costs. SCE can recover capital costs up to \$3.85 per watt without review by the CPUC.

enhancement, public relations – and perhaps more importantly, protection of customer relationships and business (Figure 14). Many states, including California, Colorado, and New Mexico now allow third party providers to sell solar power directly to utility customers. As the cost of PV gets closer to grid parity,³¹ these third party providers could win customers away with new on-site solar installations. Then, as retail access opens up, those same providers may offer energy services beyond solar, further eroding the utility's revenue. As shown in Figure 15, depending on the assumptions made for PV cost reductions and increases in conventional electricity prices, grid parity could occur around 2015, or sooner depending on pricing and incentive levels.

Although utilities are required to divest generation and operate as delivery-only companies in some states, value studies have shown that utility involvement in selecting distributed renewable energy location and managing the resource can significantly increase renewable power's contribution as a grid resource. Further supporting or accelerating this trend could increase the rate of renewable energy adoption, but ownership of generation by utilities must be addressed in the states that prohibit it.

Like energy efficiency, distributed energy resources are becoming more highly valued. New ratemaking and business model modifications, including decoupling and utility ownership of renewables, will be necessary to ensure

31. Grid parity is the point at which the cost of electricity produced by PV is equal to or cheaper than the price of electricity purchased from the utility.

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effective utilization of both DER and EE.

For utilities, developing a robust risk analysis and planning process that takes into account EE and DER scenarios and technologies is essential. Given the progress that distributed energy technologies are making, and given the above-mentioned opportunity for third-parties in some states to cherry-pick the most attractive utility customers – those who have high electricity costs, strong credit, and the means to implement alternative energy solutions – some utilities are facing growing competitive pressures leading to accelerated customer exit and revenue erosion in a manner that breaks from past experience.

For some electricity customers – particularly retail and manufacturing firms where margins are critical – the ability to source competitively-priced peak PV power and fix that cost for up to 20 years presents a value proposition too strong to ignore. Utilities will need to meet or exceed the value proposition offered by third party firms in order to compete effectively in this space.

Utility companies that meet growing customer demand by offering PV products and services (as well as other distributed energy resources and energy efficiency offerings) have a significant business opportunity. They have tremendous potential to expand service offerings across an exciting and fast growing business sector, while protecting their existing relationships with some of the most attractive members of their customer base.

In summary, to expand renewable energy, utilities should:

- Actively pursue development of a range of renewable energy projects to meet and/or exceed state renewable targets;
- Consider owning PV assets to gain experience in their implementation given the potential near-term grid parity and possible threat of third party providers serving utility customers solar power;
- Evaluate business models being used by private competitors and other utility companies to own distributed energy resources and other renewable assets; and
- Create new risk hedging and grid management mechanisms to deal with variance in customer load response, and intermittent renewable energy resources.

Energy Efficiency and Distributed Renewables for Capacity Deferral

Successfully implementing EE and DER programs requires customer involvement. In 2008, NSTAR, with funding from the Massachusetts Technology Collaborative (MTC), launched the Marshfield Energy Challenge to simultaneously implement EE, RE and demand response programs to limit demand on the local electricity distribution system. The program was designed to build community awareness and local commitment to implementing clean energy and EE.

The Marshfield Energy Challenge is a first-of-its-kind program designed to meet growing energy demand by combining targeted EE efforts with small renewable generation and demand response systems. The program involves energy audits, support for reduced-cost installation of solar panels, and the use of direct-load-control thermostats to help manage the peak demand for electricity on hot summer days. The long-term goal of the \$4 million initiative is zero electrical load growth in the town.³³

In parallel with NSTAR's Marshfield Energy Challenge, the MTC awarded funding to National Grid for a Summer Load Relief Program in Everett, East Longmeadow and Brockton, Massachusetts. This program is also expected to help defer distribution capacity upgrades with distributed energy resources and EE.

32. NSTAR completes 600th energy audit in Marshfield. Mon Nov 24, 2008. <http://www.wickedlocal.com/marshfield/homepage/x541355162/NSTAR-completes-600th-energy-audit-in-Marshfield>

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4 Incorporate Smart Grid Technologies for Consumer and Environmental Benefit

PG&E and Demand Response

PG&E offers a range of demand response programs that provide financial incentives to customers to reduce energy consumption at times of peak demand. The programs help enhance reliability, reduce costs, and avoid the need to build new power plants.

PG&E's SmartAC™ program sends a signal to air conditioners during energy supply emergencies, instructing them to use less power. PG&E aims to enroll 400,000 residential customers by 2011, reducing peak load by 305 MW.

Additionally, the company's PeakChoice™ program provides incentives to implement specific energy savings measures at peak times and aims to reduce load by 36 MW.

Smart Grid utilization is entering the mainstream, with most U.S. utilities involved in full-scale system implementations or pilot programs. As part of the American Recovery and Reinvestment Act of 2009, the U.S. Department of Energy catalyzed this activity by committing over \$4 billion of stimulus funds for Smart Grid Investment Grants and Smart Grid Demonstrations. Over the next several years, the electric utility industry will deploy advanced sensors, communications infrastructure, and control systems that will enable changes in the way electricity is produced, delivered and used. Key components of the Smart Grid as it is currently being implemented include Advanced Metering Infrastructure (AMI), Distribution Automation (DA), synchrophasor measurement and grid visualization, and the integration of distributed energy resources (DERs), including renewable energy and energy storage.

Reducing Peak Demand and Energy Consumption

A recent informal poll of Smart Grid experts revealed that active involvement of customers and utilities' understanding of consumer electricity demand as a controllable energy resource are seen as the most transformative changes that the Smart Grid will enable. Enabling large-scale demand response by providing customers enhanced information about energy use – and giving them the means to control it – are key themes within the DOE's ARRA Smart Grid programs.

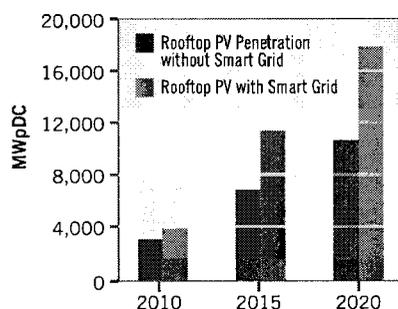
The Smart Grid Enables Higher Penetration of PV

Addressing technical challenges could result in:

- higher net metering caps
- better interconnection standards and processes
- more prevalent time of use tariffs options

These changes simplify interconnection of PV and improve its economics, increasing the projected installed capacity by over 60% by 2020.

Rooftop PV Installed Cumulative Capacity Total U.S. with Low PV System Pricing



Results based on Navigant Consulting PV Market Penetration Model and Low PV System Pricing. For the "Rooftop PV with Smart Grid" case Navigant Consulting assumes that because key technical barriers are addressed (voltage regulation, reverse power flow and power fluctuations/frequency regulation), that the some of the constraints on PV are relaxed and economics are improved.

Figure 16: The Smart Grid Enables More PV on Distribution Feeders

Source: Navigant Consulting, Inc.

Smart metering and AMI technology are only part of the solution. Utilities and regulators should develop effective pricing programs to ensure that customers are given the signals they need to make good decisions about their energy consumption. High customer participation rates in these programs are also important.

Importantly, effective technologies and pricing programs can have a significant positive impact on peak demand, allowing utilities and grid operators to reduce the amount of peaking and reserve capacity needed to maintain grid reliability.

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Since peaking capacity is often less efficient than baseload generation, peak demand reductions could produce significant carbon reduction and financial benefits.

Integrating Renewable Energy

The Smart Grid should be instrumental in helping to integrate increasing amounts of renewable energy into the transmission and distribution system. A recent study by Navigant Consulting showed that by 2020, Smart Grid functionality could help increase the penetration of distributed PV by more than 60 percent over the reference case with a traditional grid (Figure 16).³³ The main regulatory changes modeled in the study were: increasing the amount of PV that could be net metered; standardized interconnection processes; and enhanced electricity tariffs to allow PV owners to receive time-based payments for system output. Each of these changes simplified the interconnection process and improved project economics to the point where the adoption of PV increased.

Increasing Energy and Operational Efficiency

The electric transmission and distribution system is also an indirect source of GHG emissions. The wires and equipment that make up this infrastructure cause electrical losses (wasted energy) as part of their normal operation. Utilities will be able to utilize Smart Grid technologies to optimize transmission and distribution to minimize these energy losses, thus improving grid efficiency.

Today, operating and maintaining the grid requires a high degree of direct human contact. Reading meters, throwing switches, and checking equipment all require utility personnel to physically drive around the system. The Smart Grid should eliminate much of this work, reducing vehicle miles traveled and associated fuel consumption and improving utility responsiveness and customer service.

Currently, ARRA Smart Grid programs are serving as a key driver in the deployment of Smart Grid technology and infrastructure. However, this funding support is a tiny fraction of the total investment required to modernize the grid and enable the functionality necessary to achieve the clean energy and customer benefits discussed above. Implementing a modern Smart Grid is expected to take 10 to 20 years of steady capital investment by utilities, a process that business cycles, regulation and customer adoption could hinder.

AEP's gridSMARTSM Program

In 2007 American Electric Power (AEP) launched gridSMARTSM, a Smart Grid initiative designed to deliver a number of customer enablement and grid efficiency benefits. Begun as a pilot project in South Bend, Indiana with 10,000 smart meters, the gridSMARTSM is growing into a comprehensive demonstration program involving 110,000 customers in central Ohio.

The \$150 million project is partially funded with \$75 million from the DOE's Smart Grid Demonstration program. The demonstration will include smart meters, distribution automation equipment to better manage the grid, community energy storage devices, smart appliances and home energy management systems, a new cyber security center, PHEVs, and installation of utility-activated control technologies that will reduce demand and energy consumption without requiring customers to take action.

AEP is pursuing other gridSMARTSM projects in Oklahoma and Texas. The company has a goal of installing 5 million smart meters in its service areas by 2015.

33. "The Convergence of the Smart Grid with Photovoltaics: Identifying Value and Opportunities," Navigant Consulting, January 2009.

II. Five Key Elements of a 21st Century Utility Business Model

Utilities should ensure that they implement the Smart Grid in a manner that maximizes clean energy benefits, including energy efficiency and demand management, integration of renewable and distributed energy, and grid optimization. To do this, utilities must manage the technical risks of implementing a complex energy and information infrastructure over many years. They should also maintain high rates of customer participation in dynamic pricing and energy management programs.

In summary, when incorporating Smart Grid technologies, utilities should:

- Simplify the interconnection and integration of distributed renewable energy resources;
- Leverage the operational efficiencies provided by Smart Grid technology to reduce operational costs;
- Prioritize Smart Grid investments that seek to maximize benefits from energy efficiency, energy delivery and clean energy technologies;
- Provide customers with information and energy management technologies that are aligned with effective pricing programs; and
- Build out the Smart Grid by pursuing a long-term capital improvement program premised on delivering enhanced value to consumers.

5 Conduct Robust and Transparent Resource Planning

Energy planning has become extremely complex. Rate impacts, environmental impacts, water scarcity, siting and equipment and construction lead times are among of the many issues that utilities struggle with as they develop energy infrastructure plans and try to implement them. Dealing with these issues and the stakeholders that care about them

can cause schedule delays and increase costs. Collectively these factors increase project risks and can undermine utility credit quality, particularly when the projects are very large and/or controversial.

Utilities should employ open and transparent planning processes that consider the risks, probabilities, benefits, impacts and applications of multiple energy resources under various scenarios. Planning processes should include a full commitment by utilities to implement all cost-effective energy efficiency and renewable energy. Resource planning should involve greater

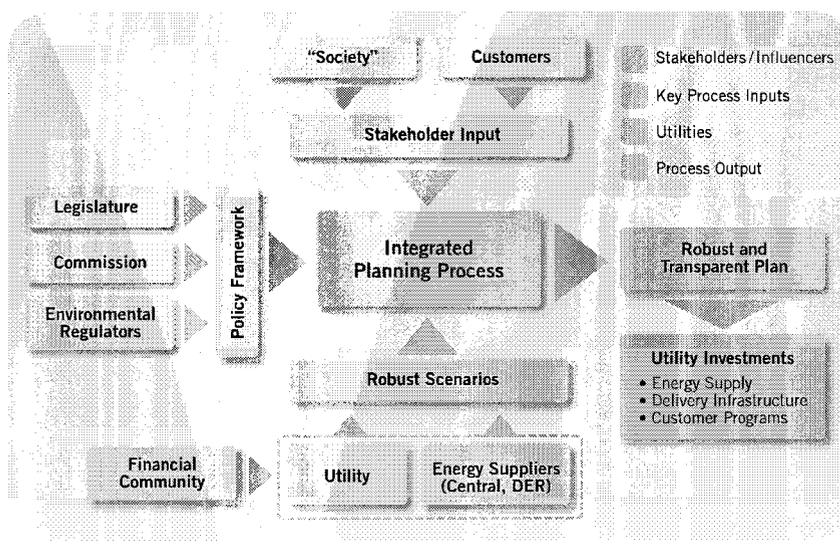


Figure 17: Example Planning Process Framework

Source: Navigant Consulting, Inc.

II. Five Key Elements of a 21st Century Utility Business Model

stakeholder involvement on a wider regional level and consider the full spectrum of EE and DER resources. Finally, utilities should update planning criteria and system design standards to reflect current and future costs for CO₂, EE, DER, equipment and permitting. Figure 17 presents an example planning process framework that could be used to ensure the development of robust and transparent resource and system plans.

This process ensures that the utility receives crucial input from the community at large. It enables the utility to reach out and educate customers, regulators, communities, and key influencers on issues that have significant impact on the utility's planning and operations. Clear policy frameworks allow all parties to better understand the goals and regulatory objectives that will influence or constrain the planning process. Finally, the development of robust planning scenarios, including assumptions about technology costs, carbon price, performance metrics, and risks, ensures that all parties have a better understanding of the tradeoffs and subtleties of different options.

In summary, utility planning processes should:

- Utilize transparent analysis and decision frameworks;
- Fairly evaluate EE and RE in robust scenario analyses;
- Facilitate input from key stakeholders; and
- Educate the public and policy makers about complex energy issues.

Engaging Stakeholders in the Planning Process

In January 2009, Arizona Public Service (APS) filed a Resource Plan Report with the Arizona Corporation Commission laying out the company's plan to meet 55 percent customer demand growth by 2025 with effectively no increase in carbon emissions. Arizona had not conducted a formal integrated resource planning process (IRP) since 1995, and APS filed its report voluntarily.

APS's Resource Plan Report emerged from a series of informal and frank conversations with environmental stakeholders – and, later, RE developers, merchant generators, large customers, Arizona's Energy Office and other utilities – on the subject of meeting Arizona's future energy needs. APS's goal was not only to obtain a wide spectrum of candid feedback, but also to inform stakeholders about real challenges the company faced. In total, APS conducted seven half-day stakeholder meetings – on topics such as climate change, RE, resource selection and load forecasting – and held additional meetings with community leaders and city councils throughout the state.

What began as an experiment is now viewed by APS as essential to its planning process going forward. APS found that focused outreach and collaboration with a small group of key stakeholders supplemented by broader outreach and communication effectively educated stakeholders (and the utility) about key issues and resources and built credibility and support for APS's future plans.

According to APS, proactive resource planning provides several important benefits to utilities:

- Positions the utility as a leader on a number of issues, including transmission, RE, and future mandatory planning;
- Educates stakeholders on the current and future issues facing the utility;
- Creates a clearer picture of what stakeholders want; and
- Helps build a relationship of trust between stakeholders and the utility.

III. Financial Implications

Utilities are grappling with several issues simultaneously, each of which will have major financial impacts. Accounting for the cost of carbon could significantly increase resource

costs for some utilities that have large portions of carbon-heavy generation in their resource mixes. However, utilities are also faced with massive reinvestment in the existing delivery infrastructure at the same they are implementing the Smart Grid and its associated technologies. All of this will require a very large, diverse long-term investment program that will have significant effects on revenue requirements and rate bases.

In the past, utilities were well known as low risk investments, with the majority having S&P credit ratings of A or higher. This meant that they were positioned to attract large amounts of capital at very attractive rates that allowed them to build

large power plants and transmission lines while managing the cost to customers. Today, the average credit rating for the industry has slipped to BBB (Figure 18), increasing utilities' cost of debt and the overall cost of financing the transition to a cleaner power sector.

Over the last five years, annual capital expenditures by U.S. shareholder-owned utilities have

almost doubled to over \$84 billion per year (Figure 19). At this rate, these utilities could invest almost \$1 trillion in capital over the next 10 years in generation, transmission and distribution assets. An outcome of this increase in capital spending (CapEx) has been a reduction in cash flow (cash from operations minus CapEx). As utilities continue to pursue large capital investment programs, they must be able to ensure that the investments are allowed into their rate base by state utility commissions to support revenue requirements. Otherwise, the utilities will incur financing costs

S&P Credit Ratings Distribution, Electric Utilities

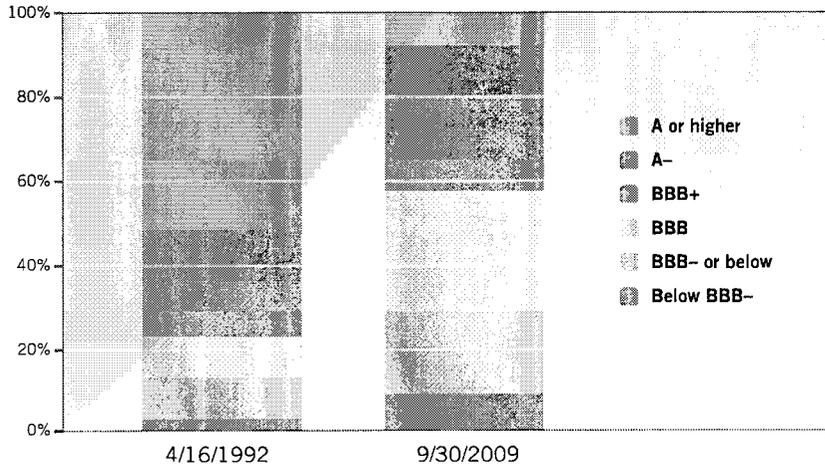
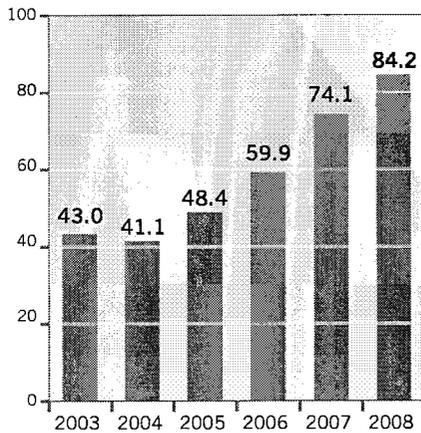


Figure 18: Long-Term Decline in Credit Quality (S&P Credit Ratings, Electric Utilities)

Sources: "Wall Street Turmoil: Impacts on Electric Utilities," Richard McMahon, Jr., Edison Electric Institute, NARUC Winter Committee Meetings, February 17, 2009; and "Q3 2009 Financial Update, Credit Ratings," Edison Electric Institute.

Capital Expenditures (\$ Billions) U.S. Shareholder-Owned Electric Utilities



Cash from Operations - CapEx (\$ Billions) U.S. Shareholder-Owned Electric Utilities

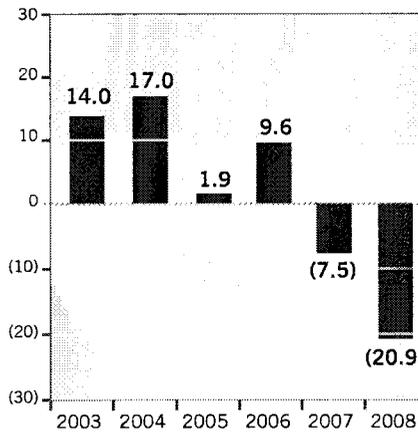


Figure 19: CapEx and Impacts on Cash Flow

Source: Edison Electric Institute

III. Financial Implications

without offsetting revenues, which will increase overall costs and could negatively impact credit ratings.

A critical challenge with rate-basing billions of dollars of new CapEx is that regulators and customers are concerned about associated rate increases. Over the past 10 years average retail electricity rates have increased an average of 50 percent across all sectors (Figure 20).

Increasing electricity rates even more to pay for clean energy and grid modernization will be challenging, particularly in today's down economy with high unemployment, and utility regulators will be concerned about rate impacts to customers.

The regulatory approval process for large-scale investment decisions presents a significant risk to utilities in the long term. Pursuing approaches that are overly capital-intensive puts upward pressure on electricity rates and increases the risk of unfavorable recovery of cost. This, in turn, could lower a utility's credit rating and increase its cost of capital. Some financial analysts are predicting that key credit metrics for utilities will be negatively impacted in the long term due to cost recovery risks from downward rate pressure.³⁴ Utilities that pursue diversified strategies utilizing cost-effective energy efficiency and distributed energy resources are likely to reduce capital investment risk.

Along with a resistance to increasing rates, the economic recession has resulted in significant reductions in electricity demand across the country, particularly in the industrial sector. This reduction translated to dramatic decreases in retail sales revenue for utilities, and forced many utilities to make sizable cutbacks in capital budgets and operating expenses. All of this demonstrated the potential long-term impact of declines in electricity consumption under a scenario where utility revenues remain tied to kilowatt-hour sales.

Recent reductions of customer demand highlight the inherent conflict most utilities have with fully embracing energy efficiency. Similar effects would be felt from widespread adoption of customer owned or sited generation such as distributed PV, or any other resources that would tend to lower energy sales by utilities. These clean energy resources could end up having a significant negative impact on utility credit quality to the extent that they erode retail electricity sales. This effect will be compounded if utilities are also forced to enhance electricity delivery infrastructure and grid operations to manage high penetrations of distributed energy resources.

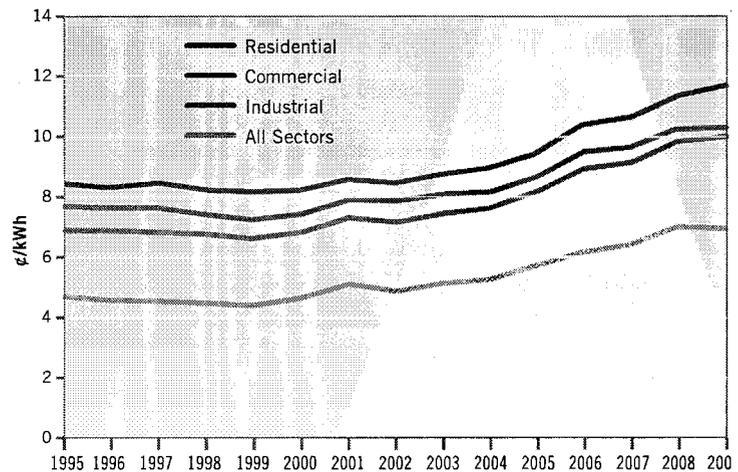


Figure 20: Historical Average Retail Electricity Prices to Customers, 1995 to 2009

Source: US Energy Information Administration

34. Moody's Investors Service, "Annual Outlook: U.S. Electric Utilities Face Challenges Beyond Near-Term," January 2010.

III. Financial Implications

Rate decoupling mechanisms offer an important potential solution by allowing utilities to cover fixed costs regardless of energy sales. Some analysts believe that decoupling can be beneficial to utility credit quality,³⁵ which could lower the utility cost of capital, and reduce the upward pressure on electricity rates. Peter Darbee, President and CEO of PG&E, cited decoupling as part of the reason that the value of PG&E's stock dropped just 10 percent during the recent financial recession, as opposed to an industry average of closer to 50 percent.³⁶ PG&E still earned a reasonable return, even though its unit sales dropped.

20th Century	21st Century
<p>Business Model</p> <ul style="list-style-type: none"> • Simple, based on steadily increasing electricity sales typically from an expanding asset base of centralized generation and traditional delivery infrastructure 	<p>Business Model</p> <ul style="list-style-type: none"> • Complex, integrated energy services serving diverse and evolving customer needs with an information-enabled infrastructure
<p>Sources of Revenue</p> <ul style="list-style-type: none"> • Power plant capital expenditures, primarily for coal, nuclear, natural gas plants • Transmission capital expenditures • Sales of generated and procured electricity • Modest energy efficiency programs in some states 	<p>Sources of Revenue</p> <ul style="list-style-type: none"> • Power plant capital expenditures, primarily for natural gas and large scale renewables plants, upgrades to fleet, also some coal w/CCS and nuclear • Transmission capital expenditures • Recovery of fixed and variable costs for electricity delivery under a revenue decoupling approach • Aggressive energy efficiency programs in most states with financial incentives for performance • Effectively deployed Smart Grid technology and services, including smart meters, energy storage, vehicle charging, etc. • Utility-owned distributed renewables

Table 3: An Emerging Business Model for Utilities

Plug-in electric vehicles (PEVs) provide a new opportunity for utilities to capture a larger share of the energy market from oil companies if PEVs are deployed widely. As electric vehicles gain consumer acceptance, utilities will face both a burden and financial opportunity as consumers demand the necessary charging infrastructure and clean energy resources.

Finally, and perhaps most importantly, the uncertainty around the cost of reducing carbon emissions presents great risk to the power sector, particularly for those utilities that have carbon-heavy generation fleets or that purchase power in such markets. Some good news is that many currently measureable risks of CO₂ emissions are beginning to be incorporated into credit quality assessments by the financial community.³⁷ Frameworks to evaluate and address carbon risks in the financing of electric power projects have already been put in place and are gaining traction, such as the Enhanced Environmental Due Diligence Process of The Carbon

35. "When Electric Efficiency Means Lower Electric Bills, How Do Utilities Cope?," Standard & Poor's, March 2009.

36. "Google CEO fires at critics, defends its energy plan" (03/05/2009) Colin Sullivan, E&E reporter

37. "Emission Reductions Under Cap-and-Trade Proposals in the 111th Congress, 2005 – 2050." World Resources Institute. June 25, 2009. <http://www.wri.org/publication/usclimatetargets>

III. Financial Implications

Principles, which is being used by Bank of America, Citi, Credit Suisse, JP Morgan Chase, Morgan Stanley and Wells Fargo.

Some analysts believe that while the economy as a whole will feel the effects of emissions reductions, the power sector will be required to reduce its carbon emissions to a greater extent.³⁸ Achieving reduction targets will go beyond pure fuel-switching from carbon-heavy to carbon-light or carbon-free resources. Integrating clean energy resources will require new technologies and operating practices to maintain grid reliability, and this also increases cost.

Fortunately, achieving a less carbon-intensive generation mix and smarter grid will create opportunities for utilities to generate revenue, as outlined in Table 3 above. Capital investments in transmission lines, smart metering and distribution automation will be added to utility rate bases. Performance incentives for EE and service quality should improve rates of return. And new applications such as electrification of transportation present growth opportunities.

Effective Risk Management Approaches

The changes underway in the 21st century electric power sector create a level and complexity of risks that is perhaps unprecedented in the industry's history. Uncertainties in the industry which give rise to the need for more intense focus on risk assessment and risk mitigation planning include, but are not limited to:

- Inherent customer demand reduction aside from energy efficiency/DSM initiatives, placing upward pressure on rates for allocation of fixed costs;
- Cost impacts of renewable energy resources, inclusive of firming requirements needed to integrate resources into a power supply portfolio;
- Carbon compliance structure and cost uncertainties;
- Uncertainty of ability to extend the commercial life, or construct planned new coal-fired power plants due to financial market views of carbon reduction mandates/structures;
- Uncertainty related to limited water supplies for power plant cooling;
- Uncertainty of the effect on natural gas prices from increased demand from central generation and capacity firming for variable renewable resources;
- Challenges of timely completion of major new inter-state electric transmission to deliver renewable energy resources to load;
- Uncertainty of customer reaction to energy efficiency and DSM initiatives in the near-term and long-term customer continued behavior;
- The potential of demand-side resources not performing, requiring more expensive short-term replacement energy; and
- The extent of large load customer out-migration based on future comparative utility rates and resultant effect on demand and cost allocation.

38. Standard & Poor's, "The Potential Credit Impact Of Carbon Cap-And-Trade Legislation On U.S. Companies," Sept. 14, 2009.

III. Financial Implications

In addition to the cost and customer load uncertainty examples noted above, directly related risks which need to be managed include:

- Debt rating agency interpretation of these uncertainties and risks and possible effects on cost of debt;
- For regulated utilities, the potential for disallowance of costs to the extent resultant rates are out of regional norms or levels of comfort;
- Regulatory treatment for the allocation of costs among customer classes as load characteristics change and cost-causation by customer class changes; and
- Retail customer reaction to rate effects.

Risk management actions that may need to be taken to address these risks could include:

- More robust analysis of possible resource mixes and associated customer reactions, along with more transparent sharing of resource-related assumptions and decisions, to inform regulators, governing boards, customer groups and financial markets; and
- Longer-term evaluation of resource mixes and associated ranges of revenue requirements to better enable identification and implementation of risk management measures.

IV. Key State Regulatory Policies for the 21st Century Power Sector

Key regulatory policies are required to support a sustainable 21st century power sector and to address the important issues discussed in this report. They include:

- Clean Energy Policies;
- Enforceable Renewable Portfolio Standards;
- Revenue Decoupling;
- Effective net Metering for Distributed Generation; and
- Incentive Ratemaking for Utilities.

These policies are most relevant at the state level, and typically fall within the purview of state governments and utility regulatory commissions. It is likely that the federal government will also set policies that put a price on carbon and increase energy independence, renewable energy and energy efficiency.

Clean Energy Policies

Achieving clean energy results requires strong leadership in government. Today, many states have a variety of policies that deal with certain aspects of energy, but many of these policies do not set an overall direction that aligns clean energy goals across their government agencies, including utility regulators. Such overarching policies are essential and serve as blueprints for how other policies should be designed, and also help to ensure that the mechanisms of these policies are compatible across the state.

To support a sustainable power sector, states need to make a full-fledged commitment to clean energy and the resources of which it is composed. In the near term these would include renewable energy, energy efficiency, distributed generation, natural gas fired generation³⁹ and the Smart Grid. Over the longer term, large-scale deployment renewable energy technologies can occur, as well as possible implementation of advanced nuclear and low-carbon coal technology. As lower-carbon resources are built, provisions for the retirement and repowering of the higher-polluting plants can be made.

California, like Massachusetts, has a state policy that places EE at the top of the priority list compared to other energy resources. California's principal energy agencies established its energy "loading order" in 2003 as energy efficiency, demand response, renewable energy and distributed generation. This loading order was established to develop and operate California's electricity system in the best long-term interest of the consumers, ratepayers and taxpayers. A key goal of the loading order is to decrease electricity demand, and then meet new generation needs, first with clean energy sources such as RE and distributed generation, and second with cleaner fossil fuel generation. This energy resource loading order continues to drive all energy policy decisions in California.

39. Natural gas fired generation is an attractive resource for significantly reducing CO₂ emissions in the near term, while at the same time being domestically available for the foreseeable future. 84 percent of the natural gas consumed in the US is produced domestically, with the remainder largely supplied from Canada. Domestic supplies have surged in recent years, with recent studies indicating that, even with a 50 percent increase in demand, natural gas would be available for 80 years. The location of natural gas supplies as an on-shore resource accessible by load centers is also attractive from an energy security perspective. For example, Marcellus shale gas in western Pennsylvania is close to load centers of PJM Interconnection.

IV. Key State Regulatory Policies for the 21st Century Power Sector

A clear, consistent, and coordinated energy policy is important because it sets the tone regarding the importance and commitment to clean energy. It clarifies priorities and serves as a roadmap for stakeholders in pursuing their detailed initiatives. It can help develop positive public attitudes toward clean energy and consequently help ensure the availability of resources necessary to pursue clean energy objectives. A clear state energy policy is also critical to provide utilities the regulatory and financial incentives to develop the five key elements of a 21st century utility business model described in this report. By establishing a firm and consistent regulatory framework, states can provide utilities with the necessary structure to manage their carbon emissions, ramp up investments in energy efficiency, renewable energy and distributed energy resources, work on maximizing the carbon and consumer benefits of the Smart Grid, and develop a robust and transparent resource planning process.

Enforceable Renewable Portfolio Standards

Another key regulatory policy in many states is a Renewable Portfolio Standard (RPS), discussed earlier and also known as Renewable Electricity Standard (RES). These regulations require electricity supply companies to produce a defined fraction of their electricity from RE sources, for which they receive renewable energy certificates (RECs). RE generators can then sell RECs (along with electricity) to utilities, who sell the electricity to consumers and use RECs to demonstrate compliance with the RPS standards. Supporters of RPS claim that since the RPS relies almost entirely on the private market for its implementation, it is an effective method to drive the growth of competition, efficiency and innovation among renewable energy generators, driving down costs and increasing adoption.

In practice, however, the presence of an RPS does not always lead to new RE installations. For example, sporadic implementation of the federal Production Tax Credit for wind power producers has led to sporadic investment and installations of wind projects, which has compromised efforts to achieve state RPS goals. Furthermore, an RPS alone is often not sufficient to stimulate the use of RE. Several states that have a RPS in place do not have enforcement mechanisms that incentivize compliance, and some of these states have little or no financial penalties for not meeting the RPS. In states like New Mexico and North Carolina, utilities are allowed to pass non-compliance costs onto ratepayers. Other states, such as New Jersey, have established appropriate non-compliance penalties that will drive new RE installations.

Creating a mandatory RPS would incentivize compliance and provide clear market signals for utilities. It would reinforce the notion that RE is a high priority and reward those parties that deliver results. It would build credibility for, and demonstrate commitment to, clean energy policy. The presence of an RPS with appropriate enforcement mechanisms in place would incentivize utilities to work toward developing some of the key characteristics of a leading 21st century utility.

IV. Key State Regulatory Policies for the 21st Century Power Sector

Revenue Decoupling

Revenue decoupling is a key regulatory mechanism that breaks the link between a utility's profits and its electricity sales. It removes the inherent disincentive for utilities to encourage reductions in the amount of electricity used by customers. Importantly, decoupling ensures that utilities recover fixed costs during times when sales growth is declining, a trend that has been in play since the 1990s.

One important aspect of decoupling is the periodic adjustment in rates in order to precisely reconcile revenue collection with the utility's commission-approved revenue requirement. This usually focuses on the non-fuel or non-generation portion of the cost of service, and is usually applied across the board and does not affect rate design. Decoupling is often applied on a customer class basis, with a reassessment of the process within three to five years. Revenues in a sound decoupling plan will tend to track what frequent rate cases would have yielded. In the end, a utility's net revenue will not be affected by sales decreases or increases, thus allowing them to focus on other priorities, notably customers.

Many utilities – along with advocates, public utility commissioners and other experts – believe that decoupling is the key enabler that will allow utilities to embrace large-scale EE and DER. By April 2010, 20 states had either implemented electric decoupling, or had decoupling pending (Figure 21).

Despite decoupling's advantages – including its elimination of the "throughput incentive," the financial incentive for (non-decoupled) utilities to sell ever-increasing amounts of power which conflicts with climate stabilization goals – not all parties currently favor decoupling. Some public advocates and customer groups oppose decoupling because they believe that it transfers risk to customers, changes rates without due consideration for all the underlying cost changes that may have occurred and reduces the incentive of utilities to operate efficiently and contain costs.

In simple form, decoupling guarantees utilities that if they promote energy efficiency, they will be compensated with appropriate rates that cover fixed costs and provide an adequate return on equity. But while decoupling eliminates a key barrier, it does not guarantee cost effective energy efficiency, nor does it provide sufficient financial incentives for utilities to embrace large-scale EE. Consequently, decoupling works best with well-designed performance based incentives. Management and performance incentives include performance based earnings, shared savings, and incentive rates-of-return. It is generally recognized as best practice to reward utilities for

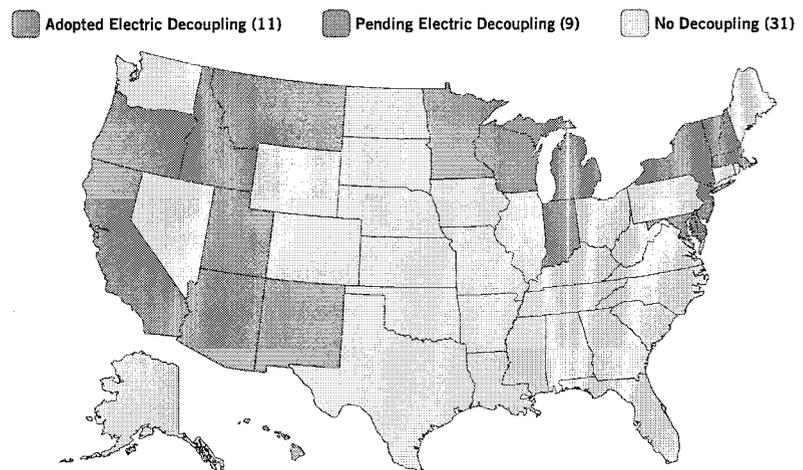


Figure 21: *Electric Decoupling in the U.S. – April 2010*

Source: Natural Resources Defense Council

IV. Key State Regulatory Policies for the 21st Century Power Sector

performance towards an energy savings target, with the richest incentives being reserved for exemplary performance.⁴⁰

Given decoupling's positive attributes – especially its effectiveness in removing utilities' inherent conflict of interest – and given concerns about alternatives to decoupling, it is reasonable to expect that decoupling will continue to gain in popularity and become the regulatory method of choice for maintaining utilities' financial health while capturing EE as the key resource for the 21st century power sector. Utility targets and performance incentives, combined with the right rate model, will help ensure that utilities become drivers for EE and DER in a manner that won't harm the utility's credit ratings or other financial metrics.

Effective Net Metering for Distributed Generation

Net metering programs serve as an important incentive for consumer investment in renewable energy generation. Net metering enables customers to use their own generation sources (e.g., a rooftop solar PV panel) to offset their consumption over a billing period by allowing their electric meters to turn backwards when they generate electricity in excess of their demand. This offset means that customers receive retail prices for excess electricity they generate.

It is generally thought that net metering is a low-cost, easily administered method of encouraging customer investment in renewable energy technologies. It allows customers to “bank” the energy they generate using renewable sources for use at other times. This flexibility allows customers to maximize the revenue from their production. Utilities may also benefit from net metering because expanded customer production of electricity during peak periods improves the system load factor and can enable utilities to avoid expensive investment in peak generation resources.

Currently, net metering is offered in more than 35 states. However, the presence of net metering policy does not guarantee that net metering will drive growth in distributed generation (DG) technologies. Many states have weak net metering policies that do not actually encourage DG adoption. Examples include:

- Preventing customers from receiving credit for excess electricity
- Allowing utilities to charge excessive standby charges

The Interstate Renewable Energy Council (IREC) publishes an annual report documenting best and worst practices in net metering policies. According to IREC's rankings, leaders include Arizona, California, Colorado, Delaware, Florida, Maryland, New Jersey, Oregon, Pennsylvania and Utah. Leading net metering policies in Colorado, for example, supported the development of nearly 22 MW of solar PV capacity in 2008, an 88 percent increase over the previous year.⁴¹

40. National Action Plan on Energy Efficiency, “Aligning Utility Incentives with Investment in Energy Efficiency,” November 2007.

41. Network for New Energy Choices, “Freeing the Grid: Best and Worst Practices in State Net Metering Policies and Interconnection Procedures,” November 2009.

IV. Key State Regulatory Policies for the 21st Century Power Sector

Incentive Ratemaking for Utilities

To achieve the conditions that will produce meaningful increases in clean energy resources and significant reductions in GHG emissions, utilities must be actively involved in the transformation. To ensure that this happens, utilities need to clearly understand the rules of the game, and receive strong signals from regulators on how to best deploy resources. A key component of successfully implementing a clean energy strategy is to reduce or eliminate the regulatory risk associated with these programs. Utility management will be hesitant to embrace what some might consider non-core activities if they feel they are putting shareholders at risk. A solution could be to create targeted incentives that give premium returns on the “right” investments. In such cases, policy makers:

- decide what the right investment choices are (e.g., generation with low carbon emissions, or energy efficiency);
- determine the value of the externality that is derived by selecting the right investment (e.g., the cost of a ton of CO₂); and
- build a portion of the value into the rate that the utility uses with its customers (e.g., 25 percent of the value of CO₂ avoided).

An important advantage to a targeted incentive is that it be crafted to reward specific choices, and is relatively simple to implement.

Attachment B

**SONOITA / PATAGONIA
SOLAR PV POWER PROJECT**



**SUBMITTED BY
AVEAN ENGINEERING AND CONSTRUCTION LLC
APRIL 10, 2010**





Avean ENGINEERING & CONSTRUCTION LLC

April 10, 2010

Gail Getzwiller
Save the Scenic Sonoita Grasslands
Sonoita AZ

Dear Gail,

Please find enclosed project pricing to provide a 1 MW Solar PV power system with 1 MW of Lithium Ion Storage Cells. Also included is pricing for a natural gas 1MW Genset to be installed in Patagonia.

Avean Engineering and Construction LLC is a turnkey company that can provide the design, engineering, permitting, project management and construction of both Solar PV power systems and Natural gas Gensets to provide the power needed.

The pricing is for the total turnkey project including fast track project management to bring the project in 6 months or less. Also included in this proposal is a 1 line Engineering drawing for a 1 MW Solar PV system.

We look forward to working with you on this project.

Sincerely,



Michael C. Meyer
Director of Operations
Avean Engineering and Construction LLC

4825 S. LAKESHORE DR.
SUITE 408
TEMPE AZ 85282
Phone: 602 492-7861
Fax: 480 345-4450
E-mail: Avean@q.com

SONOITA / PATAGONIA
SOLAR PV POWER PROJECT

DESIGN, ENGINEERING AND CONSTRUCTION OF A 1 MW SOLAR PV POWER PLANT.

\$ 5,100,000.00 OR \$5.10 PER WATT

This includes the solar panels, fixed ground mounts, combiners, inverters, power connections to the battery system.

DESIGN, ENGINEERING AND CONSTRUCTION OF 1 MW LITHIUM ION BATTERY STORAGE FACILITY.

\$ 1,400,000.00 OR \$1.40 PER WATT

This includes the lithium ion batteries, storage facility, interconnection between Solar PV plant and the grid.

DESIGN, ENGINEERING AND CONSTRUCTION OF A 1 MW NATURAL GAS POWERED GENSET.

\$1,000,000.00 OR \$1.00 PER WATT

HOWEVER THE SOLAR COULD BE BROUGHT ON BOARD BEFORE THE PEAK SEASON, POSSIBLY ELIMINATING THE NEED FOR THE GENSET. IMPLEMENTATION WOULD GIVE THE AREA THE ADDITIONAL POWER POSSIBLY NEEDED FOR THE FUTURE ELIMINATING THE NEED FOR THE 69KV LINE.

This includes the Genset, interconnection between the natural gas, and the grid. This also includes an enclosure for weather and sound deadening.

THIS PRICING IS PROVIDED BASED ON THE INFORMATION RECEIVED BASED ON THE NEEDS AND THE APPROVALS GIVEN FOR INTERCONNECTION TO THE LOCAL GRID.

Attachment C



Energy Solutions

Daniel Musgrove
Business Development
Manager

Intermountain Region
Chevron Energy Solutions
Company
6635 West Happy Valley Road
Ste. A104-607
Glendale, AZ 85310
Tel 602.697.7222
Fax 623.572.7495
dmusgrove@chevron.com

April 14, 2010

Gail Getzwiller
President
Mountain Empire Energy Project
P.O. Box 815
Sonoita, AZ 85637

RE: Budgetary estimates for components to "Hybrid Distributed Energy Solutions"

Dear Gail,

I apologize for the delay in getting back to you regarding potential options for having Chevron Energy Solutions (CES) assist your community with energy related projects. CES has spent the past year assessing the Arizona market and regulatory environment and developing appropriate initiatives. I hope that in the very near future, CES can share more specifics regarding solution-based initiatives that we can bring to your community – solutions that address your peak power capacity situation.

As for your recent requests for budget cost estimates, I have reasons to be reluctant to supply your organization with cost estimates for potential solutions. First, it is not my area of accountability in our organization. CES has a clearly defined Operations Team who provides cost estimates through formal Feasibility and Investment-grade Analyses conducted for clients.

To date, I have not been able to allocate development dollars for sending members of our Operations Team to your community. At some point, I hope to be able to provide your community with some resources to develop a more detailed assessment of the value CES can deliver.

Secondly, I do not want to represent budget costs in this correspondence that commit CES in any way. This is not a proposal or formal quote. I am providing your organization estimates as a professional courtesy to support your efforts in addressing the Arizona Corporation Commission (ACC). I have taken appropriate steps to support the estimates with members of CES' Operation Team.

Lastly, you may recall that I have represented that CES is technology & vendor agnostic. Meaning we do not manufacture products, represent or promote any one vendor, or promote any one specific type or configuration of solution. As an engineering-based energy services company our goal is to work closely with our clients and deliver custom solutions that work best for their specific needs and circumstances. Therefore, the attached quote is not to be construed as advocating the particular supplier. Rather it is to support the estimates which I'm providing in addressing the past documents submitted to the ACC.

That said, I have made attempts to provide you answers to your inquiry. To recap, you have asked for cost information in areas of; 1) natural gas powered distributed generation, 2) 1 MW of solar, 3) energy storage, either fed from solar, DG, or the grid, 4) fuel switching and 5) other DSM solutions.

April 14, 2010

Page 2

- 1) **NG-powered DG:** see attached
- 2) **1-MW of solar:** not at liberty to disclose costs at this time (suggest you seek estimates from industry trade groups and solar advocacy organizations)
- 3) **Energy Storage:** The \$3000/kW figure on page 49 & 50 of the Navigant Consulting, Inc. Feasibility Study has been confirmed by CES engineering staff to be a good, reliable figure.
- 4) **Fuel Switching:** I was unable to secure this information in the time frame given.
- 5) **Other DSM Solutions:** Too broad of a request. Many solutions and hybrid iterations are open for analysis.

Gail, I wish I could be of more service at this time. However, given CES' focus and current work load, I've been unable to gather more detail in the time allotted.

I will be contacting you shortly to present our most recent initiative being launched in Arizona. I believe this initiative can directly impact your community and help address your peak power capacity situation. We will need to work with your organization to identify the potential counter parties to a client relationship with CES. If we can resolve that issue, CES will work with the clients-to-be and establish goals and objectives of our initial Feasibility Analysis.

If you have any additional questions or requests, please do not hesitate to contact me. Again, I wish I could be of more help at this time.

Sincerely,

Daniel A. Musgrove

Daniel Musgrove

Business Development - Contractor

Enclosure

ELITE ENERGY

BUDGETARY PROPOSAL FOR:



Chevron Energy Solutions

SONOITA RELIABILITY PROJECT

(SUPPLY ALTERNATIVE R5: DISTRIBUTED GENERATION)

April 9, 2010

EliteEnergy Systems is pleased to provide a budgetary proposal for a distributed generation solution best suited to the needs of the Sonoita Reliability Project.

EliteEnergy Systems is a supplier of turnkey distributed generation systems. After careful review of the "Sonoita Reliability Project – Public Forums" Document – March 9&11, 2010 and the "Independent Feasibility Study – December 2009" provided by Navigant, our experience suggests that the optimum solution would be the installation of multiple low emissions natural gas powered electric power generation modules.

The studies and opinion polls seem to favor spending \$19M for a new 69kV line and Sonoita sub-station, we believe the more appropriate solution is to address the current transmission shortfall by providing additional power locally as needed to satisfy the growing demand by installing distributed generation, in steps that match the demand growth.

Our solution to resolve the immediate shortfall would be to install 4ea 375kW natural gas fired, extremely low emissions, power generation modules. As the limits of the existing transmission line are approached, the individual units will automatically start up, synchronize to the grid and effectively "remove" 375kW of demand as each one is dispatched. In this way the local demand will never exceed the capacity of the primary source of electricity – the existing transmission line.

The four (4) modules proposed will provide 1,500 kW when all are dispatched at the same time. We would propose that the site for these units be prepared in such a way that more modules can be added as demand increases over time.

The benefits of this distributed generation approach are as follows:

1. \$2,700,000 vs. the \$14M and \$19M for options T1 or T2.
2. Power supply is added slowly as demand increases, not all at one time.
3. The financial burden is a fraction of the cost of the new 69kV line and Sonoita substation. The T2 option is 7 times more expensive than the one we propose.
4. We would be willing to finance the equipment and spread the cost over 10 years, further reducing the upfront financial burden on local residents and businesses.
5. Flexibility. You only dispatch a machine at a time as the demand approaches the available supply from the transmission line, then they shut back down when not needed. With additional growth in demand over time you slowly add additional modules – again only as needed rather than the overkill of a \$19M new transmission line that may not be fully utilized for another 20-30 years.

6. Once demand approaches a level where a new transmission line could be fully utilized, the distributed generation modules could have their use curtailed and supply shifted primarily to the new transmission line.
7. Once the demand grows to the point where a new transmission line could be fully utilized, there will be an adequate number of residents and businesses to share the high cost.
8. By the time demand increases to justify a new transmission line, there may be new storage technologies, renewable technologies or other options that are a better long term solution than simply spending lots of money for old technology (a new transmission line). The distributed generation solution provides a solution for at least the next 10-20 years based on current load growth curves.

Budget Estimate: \$2,700,000

This is a turnkey equipment supply proposal and includes:

- Caterpillar natural gas engine power modules
- Ancillary equipment such as radiators and emissions reduction equipment
- Utility Grid interconnection equipment/breakers/relays/meters/etc.
- Fully automated, remote monitored, unmanned
- Long term service provided by Caterpillar Dealer Organization
- Weather and Sound Attenuated Enclosures
- Installation/Commissioning/Training
- Long-Term "Operation & Maintenance" contract – available if desired

Not included at this price (but available from EliteEnergy):

- Site work (concrete pad, gas line connection, electric connections)
- Step-up transformer (if needed)
- Construction Labor
- Installation Labor for items not listed in turnkey equipment supply
- Project Management

Sincerely,
Paul J. Beck
National Accounts Manager

Attachment D

Utility West, LLC.

2051 W. Northern Avenue, Suite 201 * Phoenix, AZ 85021
 fbrennan@utilitywestllc.com Office No. (602) 335-8555

Date: July 16, 2010
 Project: Sonoita, AZ
 Project No.: UW # OP 1922.02

Preliminary Opinion of Probable Cost: 24.9kV Reconductor

BUDGET ESTIMATES: 25 Miles of Double Circuit Dist.

	Quantity	Unit	Unit Cost	Current Total
UTILITY IMPROVEMENTS				
Design				
Electrical	1	Each	\$132,000.00	\$132,000.00
Electrical				
Mobilization	1	Lump Sum	\$30,000.00	\$30,000.00
Line Description: HOT CONSTRUCTION METHOD				
Reconductor Double Circuit existing HOT Three Phase 24.9kV per mile	25	mile	\$308,000.00	\$7,700,000.00
Replace 3/0a with (3) 477 ACSR & 3/0A CN				
Ruling span 250 foot, approximately 22 galvanized steel poles per mile				
2 sets of 3 phase fixtures per pole				
Upgrade (10) manual reclosures to automatic				
Pole guying with anchors 2 angle points per mile				
Replace 2 sets of voltage regulators				
Removal of replasced poles, wire and electrical equipment				
Sub-station 69kV/12kV				
Transformer/Switches/Termination (excludes land cost)	0	EACH	\$0.00	\$0.00
Typical equipment per mile				
Single phase xfmr	2	EACH	\$0.00	\$0.00
Three phase xfmr	4	EACH	\$0.00	\$0.00
Switching device: Reclosure	4	EACH	\$0.00	\$0.00
Capacitor	1	EACH	\$0.00	\$0.00
other miscellaneous items...	1	Lump Sum	\$0.00	\$0.00
Sub-total				\$7,862,000.00
System Improvement				
To be determined by planner, typ 3%	1	Lump Sum	\$0.00	\$235,860.00
Sub-total				\$235,860.00
Electrical Sub-total				\$8,097,860.00
15 % contingency				\$1,214,679.00
ELECTRICAL TOTAL				\$9,312,539.00
FEES				
Bonds and Permits	0	Lump Sum	\$0.00	\$0.00
Construction Water (2% of Construction cost)	0	Lump Sum	\$0.00	\$0.00
Construction Management (1.63% of Construction cost)	0	Lump Sum	\$0.00	\$0.00
Engineering Fees (civil only, see note 4)	0	Lump Sum	\$0.00	\$0.00
Development Fee	0	Lump Sum	\$0.00	\$0.00
FEES TOTAL				\$0.00
Grand Total				\$9,312,539.00

General Notes:

1. These preliminary opinion of probable costs are offered without the benefit of detailed design, input from reviewing agency's or other engineering documents.
2. Preliminary opinion of probable costs are based on utility cost modeling.
3. Development fees, impact fees, bonds and permit fees are based on best available information and are subject to change and/or revisions by the agency.
4. Other engineering fees, including but to limited to survey, landscape, electrical, mechanical, and geotechnical, are not included.
5. Existing public utilities adjacent to the property, do not guarantee ability or legal right to serve the property.

Attachment E

Katharina Richter
Attorney

P.O. Box 86209
Tucson, Arizona 85754-6209
520 623-3157 (Tel. and Fax)
520 250-7640 (Cell.)

June 29, 2010

Arizona Corporation Commission
1200 W. Washington St
Phoenix, AZ 85007

**Re.: In the Matter of the Application Sulphur Springs Valley Electric Inc.
Docket No. E-01575-08-0328.**

This letter is a summary of my remarks and the case law I gave to the Commissioners at the hearing of the Commission on June 29, 2010.

Sulphur Springs Valley Electric Cooperative (SSVEC) is proposing to replace its existing 29Kv electric line in the Sonoita area with a new 69Kv line to provide increased capacity for current and future needs. Rather than improving the 24.9Kv line within the existing easement (the Existing Easement), SSVEC plans to site the new line within a new easement (New Easement) in a completely different location. SSVEC justifies the relocation with an opinion written by SSVEC's attorney Robert Savage, that locating a 69Kv line in the Existing Easement would be prohibited by a court because such upgrade would be an impermissible expansion beyond the scope of its historical use.

The issue of whether the SSVEC uses the Existing Easement or a New Easement will have substantial financial impact on the rate payers. It is therefore important to have a clear picture of current Arizona law on this point.

In his letter to SSVEC, Mr. Savage opines that because there are no recorded documents establishing it, the Existing Easement most likely is a prescriptive easement, that is, an easement that was created as a result of adverse possession. Mr. Savage concludes that the 69Kv line will overburden the Existing Easement, will result in litigation and the possible loss of all of SSVEC's rights to the Existing Easement.

The cases cited by Mr. Savage to support his legal conclusions, do not, however, accurately reflect Arizona case law on the issue of whether the modernizing or upgrading of a use established in a prescriptive easement is permitted. None of the cases address the question of whether an increase in the carrying capacity of a utility line within a prescriptive easement is an unreasonable expansion of the easement rights.

Other Arizona cases, omitted by Mr. Savage, make clear that the holder of an easement is authorized to make any use the servient estate [the property burdened by the

easement] that is reasonably necessary for the convenient enjoyment of the easement. *Paxton v. Glovitz*, 203 Ariz. 63, 50 P.3d 420 (Ct. App. 2002). In support of its ruling in favor of the prescriptive easement holder the *Paxton* court cites to RESTATEMENT OF PROPERTY, SERVITUDES as follows:

"The holder of an easement is entitled to use it in any manner that is reasonably necessary for the convenient enjoyment of the easement or servitude. RESTATEMENT OF PROPERTY, SERVITUDES § 4.10. As stated in § 4.10, the manner, frequency, and intensity of the use may change over time to take advantage of developments in technology and to accommodate normal development of the dominant estate or enterprise benefitted by the servitude." Section 4.10 further explains that permissible uses of an easement are any uses which do not "cause unreasonable damage to the servient estate or interfere unreasonably with its enjoyment."

Paxton, 203 Ariz. at 70. See also *Papa v. Fiska*, 18 Ariz. App. 496, 503 P.2d 972 (1972) (the court allowed repair and improvement of a drainage ditch in a prescriptive easement).

I have not found any Arizona cases which deal with the question of whether an increase in the carrying capacity of a utility line is a permissible change within an existing prescriptive easement. However, numerous cases from other states have allowed such improvements. In *Hayes v. City of Loveland*, 651 P.2d 456, 458 (Colo. App. 1982), the plaintiff argued that the line improvements amounted to an increase in use, and therefore was an additional burden on the land. The court disagreed, and held the reconstruction of a power line "was a normal and usual evolution for its type. The reconstruction of the power line was therefore a change in the degree of use, not the kind of use, and was within the scope of the easement that burdened the property at the time the landowner acquired it." The court also rejected claim that the land owners abutting the easement suffered damage due to the proximity to the reconstructed power line and impairment of view because of the taller poles and additional conductors.

Similarly, in *Humphries v. Georgia Power Co.*, 224 Ga. 128, 160 S.E. 2d (1968) and *Kerlin v. Southern Bell Telephone and Telegraph Co.*, 191 Ga. 663, 13 S.E. 2d 790 (1941), the courts found that the installation of additional wiring that resulted in an increase in capacity was a "change in degree only" and not in kind, and appearing to be a reasonable and normal incident of the existing prescriptive rights. *Kerlin*, 13 S.E. 2d at 794.

In *Taitt v. Commonwealth Edison Co.*, 38 Ill. App.3d 273, 347 N.E. 2d 74 (Ill. App. 1976) the court allowed the defendant to convert its existing 220 Kv line to a 345 Kv. line within an existing recorded easement. The court found that the proposed power line would not increase the burden on the underlying estate and would not unreasonably interfere with the use of the underlying estate.

¹ See also the cases from other states cited in the *Hayes* opinion.

SSVEC argues that it wants to locate the 69Kv line in a new easement because it needs to complete construction as quickly as possible and cannot have its efforts delayed by possibly having to litigate its right to do so in the Existing Easement. This argument is substantially weakened by the fact that SSVEC has as yet to acquire easement rights over several portions of the New Easement alignment. SSVEC will have to acquire those rights, either by negotiated purchase or the exercise of eminent domain. Purchase negotiations or condemnation actions, even with immediate possession, as provided for in the condemnation statutes, will definitely delay completion of the new line and will result in unknown higher costs for development of the new line.

However as demonstrated by the cases referenced above, SSVEC can upgrade the existing easement by double circuiting and re-conductoring the 24.9kv line. This would more than double the capacity of the line and provide the loop service SSVEC would like to provide to this area at a substantially reduced cost to all rate payers.

Conclusion

SSVEC also argues that it cannot upgrade the existing easement to a 69kV line because this is a change of use from the use existing at the time of the creation of the Existing Easement. However, as shown by the case law cited herein, an upgrade of the power line within the Existing Easement would not be found by the courts to be an impermissible expansion or unreasonable expansion of SSVEC's easement rights.

Sincerely,



Katharina Richter

... Superior Court of Ariz. P.2d 246, 250 (App.1993) (hold- law enforcement agencies fall ator's control for purposes of closure); Rule 15.1(d) ("The obligation under this rule ex- tial and information in the pos- rol of members of the prosecu- of any other persons who have n the investigation or evalua- ze and who are under the control.") (emphasis added). ough the MCA discharged its gations in good faith, the trial precluding the State from use est results was an exercise of explicitly authorized by Rule

s good sense to hold prosecu- le for ensuring that relevant the possession of law enforce- is disclosed by imposing the elusion for non-disclosure of elusion is justified as a tool to ceutors to develop policies to v of discoverable information from local law enforcement *Carpenter*, 176 Ariz. at 189,

te another thing, however, to s' fees against a prosecutor diligent, good-faith effort to le 15.1 but is frustrated in his by the conduct of a law en- gy not directly answerable to

Under such circumstances, truth--the ultimate goal of iprocal disclosure require- d-anced by awarding attor-

the party or attorney knew or own was inaccurate or incor- w causes an opposing party to gation or discovery")

udicially created several equita -the American Rule against fee- l which apply here. See, e.g., *Dep't of Health Servs.*, 160 Ariz. d 521, 537 (1989) (private attor- ne); *Steinfeld v. Zeckendorf*, 15 138 P. 1044, 1045-47 (1914) scribe).

will simplify disclosure and eliminate unneces- sary delay and expense. *Auto* at ¶40. 1, on the other hand, fear that the majority's unprecedented construction of Rule 15.7 will have just the opposite effect, and will result in interminable delays as parties aggressively wield Rule 15.7 as a weapon to recoup litigation expenses instead of using it as a shield of last resort after the parties have been unable to informally resolve any discovery disputes between themselves.

¶57 For the reasons expressed above, I would simply affirm the trial court's order of preclusion and not remand for additional sanctions.



50 P.3d 420

Alvera PAXSON, Plaintiff-Appellant,

Stephen L. Cox, Attorney-Appellant,

v.

Robert J. GLOVITZ, a single man deal- ing with his sole and separate prop- erty, Defendant-Appellee.

No. 1-CA-CV-01-0571.

Court of Appeals of Arizona, Division 1, Department C.

July 25, 2002.

Review Denied Dec. 3, 2002.

As Amended Feb. 6, 2003.

Putative dominant estate owner brought action to establish prescriptive driveway easement. The Superior Court, Maricopa County, No. CV00-093086, Robert D. Myers, J., granted summary judgment for putative servient estate owner and awarded attorney fees, payable by plaintiff and plaintiff's counsel jointly and severally. Plaintiff and plaintiff's counsel appealed. The Court of Appeals, Ehrlich, J., held that the continued use of the driveway by putative dominant estate owners, after an unrecorded easement created by

Reversed and remanded.

1. Appeal and Error ⇨863

In reviewing a summary judgment, when the material facts are undisputed, the appellate court considers whether the superior court correctly applied the applicable law.

2. Courts ⇨89

In the absence of contrary precedent, Arizona courts look to the Restatement.

3. Easements ⇨5

To gain a prescriptive easement, a person must establish that the land in question has actually and visibly been used for ten years, that the use began and continued under a claim of right, and that the use was hostile to the title of the true owner of the land.

4. Easements ⇨7(2)

The ten-year period of use, as element for a prescriptive easement, derives from the statute of limitations for bringing an action to quiet title. A.R.S. § 12-526, subd. A.

5. Easements ⇨8(2)

If the use is permissive, it cannot ripen into an easement by prescription because it is neither "hostile" nor "adverse" to the owner's title.

6. Easements ⇨8(1)

The continued use of the driveway by putative dominant estate owners, after an unrecorded easement created by an oral agreement, was a hostile use, as element for a prescriptive easement.

7. Adverse Possession ⇨71(2)

Frauds, Statute of ⇨63(1)

An oral or parol grant of title to real property, while unenforceable because of the Statute of Frauds, will, when coupled with possession, give rise to the beginning of an adverse possession.

8. Adverse Possession ⇨71(2)

An intended, but imperfect, transfer of real property can inaugurate an adverse possession.

9. Adverse Possession ⇨106(1)

Easements ⇨5

Adverse possession leads to title, while a prescriptive easement leads to the nonexclusive right of continued use.

10. Easements ⇨9(1)

An easement by prescription may be created by a use that is made pursuant to the terms of an intended but imperfectly created servitude. Restatement Third, Property (Servitudes) § 2.16.

11. Easements ⇨7(5)

The doctrine of "tacking" permits combining the successive uses of those in privity by conveyance or agreement or understanding that refers the successive adverse use to the original adverse use and transfers that use, for purposes of meeting the hostile use requirement for a prescriptive easement.

See publication Words and Phrases for other judicial constructions and definitions.

12. Easements ⇨40

The holder of an easement is entitled to use it in a manner that is reasonably necessary for the convenient enjoyment of the easement or servitude. Restatement Third, Property (Servitudes) § 4.10.

13. Easements ⇨40

The manner, frequency, and intensity of the use of the easement may change over time to take advantage of developments in technology and to accommodate normal development of the dominant estate or enterprise benefitted by the servitude. Restatement Third, Property (Servitudes) § 4.10.

14. Easements ⇨40

Permissible uses of an easement are any uses which do not cause unreasonable damage to the servient estate or interfere unreasonably with its enjoyment. Restatement Third, Property (Servitudes) § 4.10.

15. Judgment ⇨181(15.1)

Genuine issue of material fact as to whether dominant estate owner was using the driveway easement for any purpose substantively different from its historical uses precluded summary judgment for servient estate owner based on a finding of use exceeding the scope of the easement, in servient owner's action to enforce a prescriptive driveway easement.

16. Easements ⇨63, 70

The appropriate remedy for an unreasonable use of an easement is to seek injunctive relief to limit the use, plus damages if warranted.

Cox and Cox By Alfred S. Cox, Phoenix, Attorneys for Appellants.

Jaburg & Wilk, P.C. By Kathi Mann Sandweiss, Lawrence E. Wilk and Stephen C. Rich, Phoenix, Attorneys for Appellee.

OPINION

EHRlich, Judge.

¶1 Alvera Paxson and her attorney, Stephen L. Cox, appeal a summary judgment granted Robert J. Glovitz by the superior court, thus denying Paxson relief in her action to establish a prescriptive easement over real property owned by Glovitz. The court declared that the easement was a permissive one, and it awarded Glovitz attorneys' fees from Paxson and Cox jointly and severally. We find, however, that a prescriptive easement was established as a matter of law, and, therefore, we reverse the judgment and remand this case.

FACTS AND RELEVANT PROCEEDINGS

¶2 The material facts are not disputed. Paxson and Glovitz own adjoining parcels of residential property. Together, the two parcels may be described as forming a rectangle; the long axes are horizontal along the northern and southern boundaries of the property. The top or northern half of the rectangle is owned by Glovitz. The bottom or southern half has been divided from north

to south into two sections. The northern portion. Sixty feet north and south along 1 of the rectangle.

¶3 Immediately before the division of the southern half of the rectangle was jointly owned by Euger and Roger Baker. That and Baker divided the rectangle from north to south. Baker thereafter owned the northern half and the Murphys took the southern half.

¶4 Later in 1979, the Murphys bought the parcel comprising the southern half of the rectangle. The Murphys agreed to create an easement and west straddling the eastern parcels to facilitate locating this easement between the northern and southern halves of the rectangle, running from 64th Street, past the property line and continuing into the land where it dead-ended. The matter "for all time" the easement would be 20 feet on either side of the line.

¶5 After the easement was created, the Murphys had it paved. The Murphys filed a petition with a title agency for a description so that a plat could be recorded. For reasons stated, the easement was never written grant of easement. There is, however, no doubt of the intent to create this easement, a strip of land across Glovitz's property of Paxson's claim.

¶6 In 1984, the Dal Murphys' southwestern

1. Because the Murphys' parcel provided for a driveway along his property west along his property

1(15.1)

of material fact as to estate owner was using for any purpose sub- from its historical uses judgment for servient on a finding of use ex- of the easement, in ser- to enforce a prescriptive

33, 70

ate remedy for an unrea- easement is to seek injure- the use, plus damages if

y Alfred S. Cox, Phoenix, ellants.

P.C. By Kathi Mann Sand- E. Wilk and Stephen C. orneys for Appellee.

OPINION

dge.

son and her attorney, Ste- peal a summary judgment J. Glovitz by the superior ng Paxson relief in her act- prescriptive easement over ned by Glovitz. The court easement was a permissive ded Glovitz attorneys' fees l Cox jointly and severally. r, that a prescriptive ease- shed as a matter of law, and, verse the judgment and re-

AND RELEVANT PROCEEDINGS

rial facts are not disputed. nitz own adjoining parcels of rty. Together, the two par- scribed as forming a rectan- ces are horizontal along the southern boundaries of the top or northern half of the led by Glovitz. The bottom has been divided from north

to south into two sections: Paxson owns the eastern portion. Sixty-fourth Street runs north and south along the eastern boundary of the rectangle.

¶ 3 Immediately before February 1979, the southern half of the rectangle was one parcel jointly owned by Eugene and Irma Murphy, and Roger Baker. That month, the Murphys and Baker divided the land roughly in half from north to south with the result that Baker thereafter owned the eastern half and the Murphys took the western half.¹

¶ 4 Later in 1979, the Murphys and Baker bought the parcel comprising the northern half of the rectangle. They then orally agreed to create an easement running east and west straddling the northern and southern parcels to facilitate access to 64th Street, locating this easement on the boundary line between the northern and southern halves of the rectangle, running west some 311 feet from 64th Street, past Baker's western property line and continuing onto the Murphys' land where it dead-ended. Intending to settle the matter "for all time," they agreed that the easement would be twenty feet wide, ten feet on either side of the dividing property line.

¶ 5 After the easement was settled, Mr. Murphy had it paved. He also gave instructions to a title agency to prepare a property description, so that a formal easement could be recorded. For reasons not in the record, the easement was never recorded, and no written grant of easement was produced. There is, however, no dispute as to the original intention to create the easement, and it is this easement, a strip of land ten feet wide across Glovitz's property, that is the subject of Paxson's claim.

¶ 6 In 1984, the Daleidens purchased the Murphys' southwestern parcel. The next

1. Because the Murphys needed access to 64th Street, the deeds by which the parties divided the parcel provided for a driveway easement over the northern 20 feet of Baker's parcel, extending west along his property line from 64th Street to

year, they bought from the Murphys and Baker the northern half of the rectangle.

¶ 7 The Daleidens owned the property until 1998, when they sold it to Glovitz. When they bought the property, the Murphys and Baker told them that the paved roadway was for garbage collection and other public access, and, during the time the Daleidens owned the property, the roadway was used by members of the public, by visitors to their home and by the residents of the house now owned by Paxson, as well as by utility, postal, and other private and commercial vehicles. The Daleidens believed that this use was as a matter of right; they gave no permission.

¶ 8 Paxson acquired the Baker parcel in 1995. She was shown the paved easement and told that it was for her use and for that of the general public. The City of Scottsdale had posted a sign at the entry: "Not a Through Street."

¶ 9 Paxson took part in measuring the paved driveway. The property line between Glovitz's northern parcel and Paxson's property is marked at the corners by surveyor's pins, and the driveway covers at least ten feet of the Glovitz property, continuing west in a straight line past Paxson's western boundary line.

¶ 10 When Glovitz purchased the property, he questioned the Daleidens about the driveway and was told that it had always been used for ingress and egress by neighbors as well as by the public. Glovitz knew that the twenty-foot-wide driveway extended ten feet onto the property he was purchasing. He also knew that "everybody used it" if for no other reason than that the Daleidens told him that the driveway, "throughout their ownership, had always been used for ingress and egress by neighbors as well as the public."

¶ 11 In September 2000, Glovitz began to construct a block fence along his property line where the driveway ran, and Paxson filed this action to obtain an easement by

the Murphys' land. This easement is not in dispute, and, in fact, it has been wholly or partially blocked by a wall on the Paxson property since approximately 1983.

prescription for the ten-foot portion of the driveway extending onto Glovitz's land. She also sought a temporary restraining order ("TRO") and preliminary injunction.

¶ 12 At the hearing for the TRO and preliminary injunction, Glovitz took the position that use of the purported easement had never been hostile but was in fact permissive. Paxson contended that use of the property as a matter of right, over time, created a presumption of "hostility."

¶ 13 Mrs. Murphy testified at the hearing as to the circumstances surrounding the creation of the easement along the property line between the northern and southern parcels, paving ten feet on either side to make a twenty-foot road. The Murphys and Baker had anticipated that additional houses would be built on the land and that these people would have access over the easement "so that garbage trucks could come up, so fire trucks could come up, and so we could have any access that we needed."

¶ 14 Mrs. Murphy also testified that, while she owned the land, the easement was used by various people and entities, and that the former owners of the Paxson property had used the driveway for vehicles to get to their garage and the back part of their property. When the property was sold to the Dalciens, they were told that it was a road and an easement. She also testified that the use of the roadway by the owner of the Paxson property was a matter of right and not by permission.

¶ 15 The superior court denied interim relief to Paxson. It found no basis in fact or law for a TRO or preliminary injunction and no likelihood of success on the merits of Paxson's claim.

¶ 16 Glovitz then moved for summary judgment. He argued that Paxson could not establish the elements of a prescriptive easement as a matter of law. The basis for his argument was that the driveway had been established by agreement among the adja-

cent landowners and, therefore, its use had remained permissive since inception.

¶ 17 Paxson countered that the encroachment on Glovitz's land had been "open, visible, continuous and unmolesated" for more than ten years and was therefore presumptively under a claim of right and not by license of the owner, citing *Gusherski v. Lewis*, 64 Ariz. 192, 167 P.2d 390 (1946). Glovitz replied that the undisputed intention to create the easement rendered the use permissive and rebutted the presumption of hostility. The superior court granted Glovitz summary judgment "for the reasons and based upon the facts and legal authorities cited by [him]."

¶ 18 Glovitz then moved for an award of attorneys' fees. He claimed an entitlement to fees on several bases, including Arizona Rule of Civil Procedure 11(a) and Arizona Revised Statutes ("A.R.S.") §§ 12-349 (1992), 12-350 (1992) and 12-1103(B)(1994).² He asked that fees be awarded against both Paxson and her counsel on the basis that Paxson's claim had no basis in fact or law. The superior court granted the motion for fees and signed the form of judgment presented by Glovitz quieting title to the property and awarding Glovitz fees of \$38,510.50 against Paxson and her counsel, jointly and severally.

¶ 19 Paxson moved for new trial. She contended that the open and notorious use of the easement since 1979, more than the prescribed ten-year period of limitation, had created a presumption of hostility. The Murphys and Baker, although intending to create a recorded, formal easement, had instead, Paxson argued, created an easement by parol, unenforceable because of the Statute of Frauds, but effective to initiate a use that was thereafter adverse according to the principles of *Tenney v. Luplow*, 103 Ariz. 363, 442 P.2d 107 (1968). Paxson also cited RESTATEMENT (THIRD) OF PROPERTY SERVITUDES § 2.16 (2000) ("RESTATEMENT: SERVITUDES")

unreasonably expanded or delayed. Section 12-1103(B), A.R.S., authorizes an award of fees in an action to quiet title when the party seeking relief has tendered a deed and nominal fee to the adverse party in an effort to resolve the dispute before seeking judicial relief.

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A. Requirement

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for the proposition that an "intended but
imperfectly created" easement gives rise to
an easement by prescription when the other
requirements for such easements are met.
The superior court denied the motion without
explanation, and Paxson and Cox appealed
from the judgment.

DISCUSSION

[1] ¶20 Paxson's essential contention is
that the unrecorded easement created by
agreement in 1979 ripened into a prescriptive
easement over what is now Glovitz's prop-
erty. Glovitz argues that the agreement to
create the easement rendered the use per-
missive from its inception and not hostile,
defeating Paxton's claim to an easement by
prescription. In reviewing a summary judg-
ment, when the material facts are undisput-
ed, we consider whether the superior court
correctly applied the applicable law. *United*
Serres Auto. Ass'n v. DeValencia, 190 Ariz.
436, 438, 949 P.2d 525, 527 (App.1997).

[2] ¶21 While neither the parties nor we
have discovered any Arizona case controlling
the resolution of this case, there is longstand-
ing Arizona authority on the closely related
subject of adverse possession that sets forth
applicable principles. Those same principles
underlie the rule of the RESTATEMENT: SER-
VITUDES § 2.16 relating to prescriptive ease-
ments, and we conclude that the Restate-
ment rule is the one that we should follow in
resolving this dispute.³

A. Requirements of a Prescriptive Easement

[3-5] ¶22 To gain a prescriptive ease-
ment,

a person must establish that the land in
question has actually and visibly been used
for ten years, that the use began and
continued under a claim of right, and [that]
the use was hostile to the title of the true
owner of the land.

Harambasie v. Owens, 186 Ariz. 159, 160, 920
P.2d 39, 40 (App.1996)(citing *Ammer v. Ari-
zona Water Co.*, 169 Ariz. 205, 208, 818 P.2d

3. In the absence of contrary precedent, Arizona
courts look to the Restatement. *Campbell v.*
Westdahl, 148 Ariz. 432, 436, 715 P.2d 288, 292

190, 193 (App.1991); A.R.S. §§ 12-521(A),
12-526(A)); see RESTATEMENT: SERVITUDES
§ 2.17. The ten-year period of use derives
from the statute of limitations for bringing
an action to quiet title. *Gusherski*, 64 Ariz.
at 195, 167 P.2d at 392; A.R.S. § 12-
526(A)(action for recovery from adverse pos-
session must be commenced within ten
years). If the use is permissive, it cannot
ripen into an easement by prescription be-
cause it is neither "hostile" nor "adverse" to
the owner's title. *Herzog v. Boykin*, 148
Ariz. 131, 133, 713 P.2d 332, 334 (App.1985).

[6] ¶23 There is no dispute in this case
that the easement was created in 1979 and
that it has been actually and visibly used
since that time, a period of more than ten
years. The only issue is whether the circum-
stances of the creation of the easement were,
in legal effect, adverse or permissive. Glo-
vitz argues that the use was permissive be-
cause it began and continued by agreement.
Paxson contends that the Murphys and Bak-
er "imperfectly" created the easement by not
complying with the formalities to place it of
record, thus inaugurating a use adverse to
the owners' title just as the parol gift of real
property served to begin an adverse posses-
sion in *Tenney*.

¶24 The Murphys and Baker intended in
1979 to create a recorded easement for use
by all then and future owners of the sur-
rounding land and for public access. Had
the easement been recorded, as the parties
intended it to be, subsequent rights of use
would have been permanently fixed and not
"permissive," that is, not subject to revoca-
tion as would be a license. See *Continental*
Tele. Co. of the West v. Blazzard, 149 Ariz. 1,
5, 6, 716 P.2d 62, 66, 67 (App.1986) (unrecor-
ded easement is a license and does not run
with the land or bind subsequent purchasers
without notice).

[7] ¶25 Glovitz's argument that the use
was permissive runs contrary to the undis-
puted intent of the parties to relinquish their
exclusive rights to their land permanently in
favor of adverse rights to use the easement.

(App.1985)(applying RESTATEMENT (SECOND) OF
PROPERTY § 15.2 (1977)).

In other words, the Murphys and Baker made an oral grant of easement. It long has been recognized in Arizona that an oral or parol grant of title to real property, while unenforceable because of the Statute of Frauds, will, when coupled with possession, give rise to the beginning of an adverse possession. *Tenney*, 103 Ariz. at 368, 442 P.2d at 112.

¶26 In *Tenney*, Luplow, who had been living in a house with the permission of the owner, was given the abstract of title to the property and told that it belonged to her. She therefore continued to occupy the home, paying taxes and making improvements, for more than the ten years required to take title by adverse possession. After the death of the donor of the land, the donor's estate attempted to retake the property, but Luplow successfully sued to quiet title by adverse possession. The supreme court affirmed the judgment in her favor, stating:

Parol gifts of land are within the Statute of Frauds . . . yet plaintiff is not precluded from asserting her adverse claim even though she mistakenly thought her title was perfected by the delivery of the abstract of title. The character of plaintiff's possession is the crucial turning point here.

Id.

¶27 The supreme court explained that a mistake as to one's right of possession is not determinative. The intention to take possession is the test by which adverse possession is judged, and the court cited with approval cases from other jurisdictions in which it was held that "entry [on land] under a parol gift can nevertheless be adverse as against the true owner." *Id.*

¶28 As does Glovitz, *Tenney* argued that, because Luplow's occupancy of the property had begun with permission, her use could not be adverse. As we now reject that argument, the court stated:

The fallacy in the argument for the defendants here lies in the apparent assumption that permission is not sufficient to inaugurate an adverse possession. Such, however, is not the true principle, for even the cases cited by the defendants lay down the doctrine that a gift of land by parol, itself

permissive in its character and voluntary in its inception, establishes the beginning of an adverse possession.

Id. (quoting *Miller v. Conley*, 96 Or. 413, 190 P. 301, 303 (1920)).

¶29 The supreme court concluded that making a parol gift of the property, vacating it and permitting the donee to remain there for at least ten years was no less adverse than if a claimant had taken possession of the property at gunpoint. Moreover, giving possession with the intent to confer legal title was different from giving permission to occupy land in subordination to the legal title. Once the attempted gift of title had been made, Luplow's occupancy of the premises "was no longer gratuitous but rather her interest commenced to ripen from that point into a fee simple by adverse possession." *Id.* at 369, 442 P.2d at 113.

[8] ¶30 The *Tenney* case thus stands for the proposition that an intended, but imperfect, transfer of real property can inaugurate an adverse possession, and it is in accord with the earlier case *Spillsbury v. School District No. 19 of Maricopa County*, 37 Ariz. 43, 288 P. 1027 (1930). In *Spillsbury*, the claimant to the land was unable to produce a deed but able to produce other recorded instruments, signed by the record title holders, reciting that the property had been deeded away. This evidence, the supreme court held, was sufficient to "negative" the idea of occupancy by license and justified the superior court in finding that, because the property had been occupied pursuant to a deed, such occupancy was necessarily hostile to the record title holders and known to be so by them. *Id.* at 47-48, 288 P. at 1029. As a result, the claimant succeeded in establishing title by adverse possession.

[9] ¶31 Both the *Tenney* and *Spillsbury* cases involved the establishment of title by adverse possession, not an easement by prescription as presented in this case, but the differences are slight for this purpose. Adverse possession leads to title, while a prescriptive easement leads to the nonexclusive right of continued use. *Ammer*, 169 Ariz. at 208, ¶ 1, 818 P.2d at 193, n. 1. The principles of these adverse possession cases sensibly

apply to Paxson's claim.

[10] ¶32 Indeed, *TENNESSEE* applies these easements by prescription requirements: a use "thorough" and "continued" for the prescribed period for the present. *Harmonbasie*, 186 Ariz. 40. Section 2.16 provides that an easement by prescription is created by "a use thorough and continued for the prescribed period." It gives the rationale for why it applies when "a use thorough and continued for the prescribed period" but fails, in part, not to reduce their force or because they fail to meet other formal requirements. If the use is not as though the time prescribed, it is not as long as the time prescribed, or such servitude are not in compliance with the cause it provides satisfaction and terms resolves any doubts that may have been created to comply with the force.

¶33 As further explained by the drafters of the Restatement, this could arise over "hostile" when applied to an easement. Indeed, if hostility is taken to lead to "the erroneous

4. RESTATMENT SERVICE that is essentially identical to Blackacre, a court, orally agreed to for use of a common boundary. way for 20 years for a year of their lots. The jurisdiction is 15 years conclusion would be prescription had been Blackacre and White

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v. Conley, 96 Or. 413, 190

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apply to Paxson's claim of prescriptive ease- ment.

[10] ¶32 Indeed, RESTATEMENT: SERVI- TUTES applies these same principles to easements by prescription. Section 2.17 estab- lishes requirements for prescriptive easements: a use that is "open or notori- ous" and "continued without effective inter- ruption for the prescriptive period." See *Harambasic*, 186 Ariz. at 160, 920 P.2d at 40. Section 2.16 provides in pertinent part that an easement by prescription may be created by "a use that is made pursuant to the terms of an intended but imperfectly created servitude." Comment a to § 2.16 gives the rationale for the rule and adds that it applies when "people try to create a servitude but fail, initially because they do not . . . reduce their agreement to writing, or because they fail to comply with some other formal requirement imposed in the jurisdiction." If the parties then proceed to act as though they were successful for the prescribed time, the servitude is creat- ed as long as the other requirements for such servitude are met. As stated in Com- ment a, complying with the terms of the easement for the set period "substitutes for compliance with the required formality be- cause it provides satisfactory proof of the existence and terms of the servitude and resolves any doubts as to the parties' intent that may have been created by their failure to comply with the formality."

¶33 As further explained in Comment a, the drafters of the Restatement have specifi- cally enunciated this rule to clear confusion that could arise over the words "adverse" or "hostile" when applied to an imperfectly creat- ed easement. Indeed, if the requirement of hostility is taken "too literally," it could lead to "the erroneous conclusion that use

4. RESTATEMENT: SERVITUDES contains an illustration that is essentially identical to this case: "O, the owner of Blackacre, and A, the owner of White- acre, orally agreed to create mutual easements for use of a common drive to be built along their common boundary. They both used the drive- way for 20 years for access to the garages at the rear of their lots. The prescriptive period in the jurisdiction is 15 years. Upon these facts, the conclusion would be justified that servitudes by prescription had been acquired in favor of both Blackacre and Whiteacre for use of the common

pursuant to an oral grant cannot give rise to a prescriptive right because it is not ad- verse," whereas, not only may a prescriptive easement be based upon a continuing ad- verse use for the period of the statute of limitations, but also, as explained in Com- ment b to § 2.17, the long-continued use may act to "perfect a flawed title." RESTATEMENT: SERVITUDES § 2.17 cmt. b.⁴

[11] ¶34 The predecessors in title to Paxson and Glovitz attempted to create an easement in 1979; this effort was "imperfect" for lack of compliance with the necessary procedures. The property owners who agreed to create the easement and their grantees acted to recognize it thereafter, from 1979 until Glovitz acted in 2000, a peri- od in excess of the prescriptive period of ten years.⁵ An easement by prescription had, therefore, been established before Glovitz bought the property in 1998. The superior court erroneously granted summary judg- ment to Glovitz on the apparent basis that the easement was, in legal effect, merely a permissive license which Glovitz could re- voke.

B. Scope of the Easement

¶35 As an alternate basis for summary judgment, Glovitz contended that Paxson had improperly expanded the scope of the ease- ment because she was using or intending to use her property in ways allegedly different from its historical uses. The superior court in granting Glovitz's motion did not set forth the basis for its ruling, and we are unable to determine whether its decision was based upon this argument as well. Glovitz renews the argument as an alternative basis for af- firming the judgment.

drive." RESTATEMENT: SERVITUDES § 2.16 cmt. d, illus. 4.

5. The adverse use need not have been carried on by the same person for the entire ten years. The doctrine of tacking permits combining the suc- cessive uses of those in privity by conveyance or agreement or understanding that refers the suc- cessive adverse use to the original adverse use and transfers that use. *Ammer*, 169 Ariz. at 209, 818 P.2d at 194.

[12-14] ¶36 On this record, it would have been error to quiet title to the easement in Glovitz upon the basis that Paxson was exceeding the scope of reasonable use. The holder of an easement is entitled to use it "in a manner that is reasonably necessary for the convenient enjoyment" of the easement or servitude. RESTATEMENT: SERVITUDES § 4.10. As stated in § 4.10, the "manner, frequency, and intensity of the use may change over time to take advantage of developments in technology and to accommodate normal development of the dominant estate or enterprise benefitted by the servitude." Section 4.10 further explains that permissible uses of an easement are any uses which do not "cause unreasonable damage to the servient estate or interfere unreasonably with its enjoyment."

[15, 16] ¶37 Although Glovitz complained of the uses Paxson allegedly is making of her property, he presented no evidence that her use of the easement was causing unreasonable damage or interfering unreasonably with the enjoyment of his property, nor is there evidence that Paxson is using her property in an unlawful manner. Rather, Paxson disputes that she is using the easement for any purpose substantively different from its historical uses. Such a controversy creates an issue of fact that could not be resolved by summary judgment. More importantly, the appropriate remedy for an unreasonable use of an easement is to seek injunctive relief to limit the use, plus damages if warranted.

See *Pinkerton v. Pritchard*, 71 Ariz. 117, 127, 223 P.2d 933, 938 (1950).

C. Attorneys' Fees and Costs

¶38 The resolution of this matter in favor of Paxson serves to reverse the attorneys' fees awarded to Glovitz. Paxson has prevailed on appeal, and her claim was therefore not without merit so as to warrant application of A.R.S. §§ 12-349 and 12-350 or Arizona Rule of Civil Procedure 11(a). Glovitz did not succeed in quieting title to the easement so as to justify a fee award pursuant to A.R.S. § 12-1103(B).

¶39 As the prevailing parties on appeal, Paxson and Cox are entitled to recover their costs on appeal upon compliance with Arizona Rule of Civil Appellate Procedure 21(a).

CONCLUSION

¶40 The judgment is reversed, and this matter is remanded to the superior court.

CONCURRING: ANN A. SCOTT
TIMMER, Presiding Judge, and
JEFFERSON L. LANKFORD, Judge.



Frank Douglas HULL

v.

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1. Sheriffs and Consts

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**THOMAS TALTY et al., Plaintiffs-Appellants, v. COMMONWEALTH EDISON
COMPANY, Defendant-Appellee**

No. 75-254

Appellate Court of Illinois, Third District

38 Ill. App. 3d 273; 347 N.E.2d 74; 1976 Ill. App. LEXIS 2358

May 6, 1976, Filed

PRIOR HISTORY: [***1] APPEAL from the Circuit Court of Will County; the Hon. MICHAEL A. ORENIC, Judge, presiding.

DISPOSITION: Affirmed.

CASE SUMMARY:

PROCEDURAL POSTURE: Plaintiff property owners appealed the order of the Circuit Court of Will County (Illinois), granting summary judgment in favor of defendant electric company and finding that the electric company had the right under the terms of an easement to convert the existing 220KV transmission line to a 345KV line.

OVERVIEW: The issue before the court was whether the electric company could convert an existing 220KV electric transmission line to a 345KV line and replace existing towers with new towers under easements granting the company a perpetual right to construct, operate, use and maintain electric transmission lines (including towers and necessary fixtures). Affirming the trial court's judgment for the electric company, the court found ample support for the trial court's conclusion that the proposed replacement line and towers would not increase the burden on the underlying estate and would not interfere with the agricultural use of the premises. Further, logic justified the finding that the grant of a "perpetual right to construct, operate, use, and maintain" transmission lines was an unlimited grant. There was no limitation in the easement on the size or the number of the electric transmission lines to be installed, which would not have been difficult to do if the parties had any such intention. The court also found that the electric company clearly established the need to modernize its transmission system in order to meet the increased public demands for electric power.

OUTCOME: The court affirmed the trial court's grant of summary judgment to the electric company.

CORE TERMS: towers, easement, transmission line, electric, row, transmission, installed, erected, feet, agricultural use, servient, crossarms, convert, replacement, interfere, replaced, pipeline, property owners, right to construct, grants of easement, electrical, generating, perpetual, unlimited, replace, grantors', parcel

LexisNexis(R) Headnotes

Energy & Utilities Law > Federal Oil & Gas Leases > Easements & Rights of Way
Energy & Utilities Law > Transportation & Pipelines > Easements & Rights of Way
Real Property Law > Limited Use Rights > Easements > General Overview

[HN1] A right of way is one including the right of improving, from time to time, according to the improvements of the age.

COUNSEL: Hynds & Hynds, of Morris, and Albert H. Krusemark, of Joliet, for appellants.

Murphy, Timra, Lennon & Spesia, of Joliet (Ralph C. Murphy, of counsel), for appellee.

JUDGES: Justice Stengel delivered the opinion of the court. Alloy, P.J., and Stouder, J., concur.

OPINION BY: STENGEL

OPINION

[*274] [**74] Owners of several parcels of real property join in this appeal from a summary [**75] judgment entered in favor of Commonwealth Edison in the Circuit Court of Will County. The disputed issue is whether Edison may convert an existing 220KV electric transmission line to a 345KV line and replace existing towers with new towers under easements granting Edison "a perpetual right to construct, operate, use and maintain electric transmission lines (including towers and necessary fixtures and wires and cables attached thereto) * * * for the transmission of electrical energy; such lines to form a part of an electric transmission system * * *"

The easement grants contained a limitation on the number of towers to be erected on each parcel "with not more than one-half of said number [***2] in each of two parallel rows, and with the towers of the second row, if and when installed, approximately opposite those of the row first installed." Additional provisions obligated the grantees to pay any damage to fences, crops and livestock arising from construction, use, and maintenance of the lines and also gave the grantors the oil and coal rights plus the right to agricultural use of the premises.

These easements were granted to the Super Power Company of Illinois, an Illinois corporation, between 1932 and 1937, pursuant to an order of the Illinois Commerce Commission which had given the Super Power [*275] Company a certificate of convenience and necessity to erect one 220KV transmission line. In 1938 Super Power Company assigned its easement rights to Edison.

In 1940 Edison erected the first row of towers to support a 220KV line, and, in 1969, erected a second row to support a 345KV line. According to the evidence, after 1940, development and utilization of higher capacity generating units and transmission systems had progressed to the point that 345KV transmission lines became feasible for the first time. Now, as a result of the increased demand for electric power [***3] in the area supplied by Edison, new generating units are being constructed which must be served by transmission lines having an increased capacity. To provide this capacity, Edison proposes to replace the existing 220KV line with a second 345KV line.

The proposed towers for the new 345KV line will be nearly identical to those in the second row of towers erected in 1969, except that the new towers will average 16 feet higher and the crossarms 8 feet higher. All 345KV line towers have two crossarms, instead of one on the 220KV line, and have a greater clearance for the lowest crossarms and lines than the 220KV line towers. The new towers will be attached to the existing foundations except for two towers where the 30.3 feet square foundations will have to be removed and replaced by 45.4 by 20 feet rectangular foundations.

The trial court held that Edison had the right to convert the existing 220KV transmission line to a 345KV line under the terms of its easement grants. In reaching this conclusion, the court found that the easement grants were "unlimited grants to perpetually construct, operate, use and maintain electrical transmission lines over the grantors' properties," restricted [***4] only as to the number of towers in two parallel rows with no limitation as to voltages or size of towers, and that the construction of the first 220KV line did not limit the easements to a line of that capacity. The court also found the new 345KV line will not increase the burden on the servient estates or interfere with the agricultural use of the ground surface. The proposed conversion to a 345KV line was found to be merely an alteration of the instrumentality of the easements and within the purpose of the easement grants. The court expressly held that Edison is entitled to convert the 220KV line to a 345KV line in order to take advantage of the improvements of the age, modern inventions and developments in the art of electric transmission that were not possible at the time the easement grants were given.

[**76] The property owners contend that the original grants of easement for the purpose of *constructing* power lines and towers did not encompass later removal and *reconstruction* of new towers and that the proposed replacement of the 220KV line with a 345KV line imposes an [*276] unreasonable burden on the servient estate and one not contemplated by the original [***5] parties to the easement grant. We believe these arguments are not persuasive.

First, after carefully examining the record, we find ample support for the trial court's conclusion that the proposed replacement line and towers will not increase the burden on the underlying estate and will not interfere with the agricultural

use of the premises. Damages resulting from the construction work itself have been paid in each case except for the case of plaintiffs Talty where the amount of damages is being litigated. The facts of this case are similar to those in *Weaver v. Natural Gas Pipeline Co. of America* (1963), 27 Ill. 2d 48, 188 N.E.2d 18, where an existing 4-inch gas pipeline was replaced with a 10-inch line, and no increased burden on the servient estate was found.

Second, although the grants of easement did not contain words such as "reconstruct" or "renew," they did grant "a perpetual right to construct, operate, use and maintain" transmission lines. (Emphasis added.) We believe logic alone would justify the finding by the trial court that this was an unlimited grant. Certainly the initial use (construction of a 220KV line) does not indicate any intention to limit the [***6] easement to lines of that size since there was no ambiguity in the grant itself. (*Weaver v. Natural Gas Pipeline Co. of America*.) There was no limitation in the easement on the size or the number of the electric transmission lines to be installed which was not difficult to do if the parties had any such intention. Furthermore, we think it noteworthy that these same property owners in 1969 acquiesced in the construction of a 345KV line as the second line permitted to Edison under the easement grants.

Third, Illinois courts have long recognized that [HN1] a "right of way is one including the right of improving, from time to time, according to the improvements of the age." (*Heuer v. Webster* (1st Dist. 1914), 187 Ill. App. 273, 278; *Diller v. St. Louis, Springfield & Peoria R.R.* (1922), 304 Ill. 373, 136 N.E. 703. See also Annot., 3 A.L.R.3d 1256, § 9(a) (1965).) Edison clearly established the need to modernize its transmission system by replacing the 220KV line installed in 1940 with a larger capacity line utilizing improved development in the power transmission field, in order to meet the increased public demands for electric power.

For the reasons stated, we affirm the judgment [***7] of the trial court.

Affirmed.

KERLIN et al. v. SOUTHERN BELL TELEPHONE AND TELEGRAPH COMPANY

No. 13483

Supreme Court of Georgia

191 Ga. 663; 13 S.E.2d 790; 1941 Ga. LEXIS 368

March 12, 1941, Decided

PRIOR HISTORY: [***1] Injunction. Before Judge Davis. Clayton superior court. June 24, 1940.

Southern Bell Telephone and Telegraph Company filed a suit for injunction against J. J. Kerlin and his wife. The petition alleges that J. J. Kerlin claims to own, and with his wife occupies, a described tract of land in Clayton County, across which the plaintiff operates a telephone line; that of this line approximately twelve telephone poles and the wires attached thereto are situated upon the land so occupied by the defendants; that the plaintiff desired to string two additional wires over and across this tract, and was about to go on the land for that purpose and for the purpose of maintaining "such telephone line" and clearing the same of obstructions, but that the defendants objected and threatened to use force to prevent the plaintiff from entering upon the land for such purposes. It was to restrain such interference on the part of the defendants that injunction was sought. After the petition was amended a renewed general demurrer attacking the petition for various reasons was overruled, and the defendants excepted.

Stated more fully, the allegations were as follows: The plaintiff is a telephone [***2] company, and as such maintains a system of exchanges and lines throughout the State of Georgia and other southern States, by means of which it furnishes to its subscribers and patrons a comprehensive telephone service both intrastate and interstate. Before June 30, 1905, Commercial Telephone Company, a corporation existing under the laws of Georgia, constructed at great cost a line of telephone poles, and wires between said poles, over and across the property now owned by the defendant J. J. Kerlin. This line of poles and the wires strung thereon were used by said company in its general telephone business. On May 30, 1905, the plaintiff purchased from said company all of its properties, franchises, pole lines, rights of way, and all property of every kind belonging to it, excepting only cash on hand, book accounts, and real estate. Since May 30, 1905, the plaintiff has owned, operated, and maintained said pole line over and across the property now owned by the defendant, and has continuously used said pole line and the wires thereon in its business of rendering general telephone communication service. The plaintiff has continuously occupied the land upon which said pole line is [***3] situated since May 30, 1905, and such occupancy has been open, notorious, adverse, and exclusive and under a claim of right. Said occupancy has been evidenced by the location on said property of approximately twelve telephone poles and such wires strung between said poles as are necessary to adequately accommodate the business of the plaintiff. Said pole line has been in continuous existence since originally constructed by the Commercial Telephone Company and since the purchase of said pole line from said company by the plaintiff, and the plaintiff has from time to time gone upon the said property whenever necessary for the purpose of attaching additional wires to those theretofore existing, or for the purpose of keeping the said pole line and wires clear from obstructions and encumbrances, such as growing trees and other obstructions. The plaintiff is now engaged in stringing an additional circuit of wires over the said pole line for use in its general business aforesaid, the construction of which additional circuit is essential to the plaintiff in maintaining its service to the public. Such circuit consists of two wires to be added to the number of existing circuits already strung [***4] on said pole line. The additional circuit is almost completely installed, except for that portion thereof which is to go across the property now occupied by the defendants.

On or about March 6, 1939, when the plaintiff's agents undertook to enter upon the property for the purpose of installing said additional circuit of wires and for the purpose of maintaining said pole line and keeping the same clear of obstructions, the defendants resisted the efforts of the plaintiff's agents so to come upon the said land and threatened to do them violence and bodily harm if they should enter thereon. The plaintiff has thus been prevented by the defendants from peaceably entering upon said premises for such purposes, and the plaintiff's agents can not so enter upon said property without danger to them of bodily harm. There is situated on the property of the defendant J. J. Kerlin a small locust tree, directly under the pole line and wires of the plaintiff company. This tree has now grown up and into the bottom two cross-arms and bottom two strands of wire now located upon said pole line. From the nature of the business carried on by the plaintiff, and from the nature of

a [***6] prescriptive easement over the defendants' land for the purpose of maintaining and operating a wire line.

2. "Actual possession of lands is evidenced by inclosure, cultivation, or any use and occupation thereof which is so notorious as to attract the attention of every adverse claimant, and so exclusive as to prevent actual occupation by another." Where poles and wires were used in the operation of a telephone line or lines over the lands of another, they should be considered as having marked or outlined a general area in use according to the usual and ordinary manner; and if the outer limits of this space remained the same for the prescriptive period of twenty years, the resulting easement would apply at least to such general area, so that the stringing of additional wires anywhere therein consistently with customary location would be permissible as territorially within the easement, whether or not the identical space to be physically occupied by such wires had ever before been so occupied by other wires. As against general demurrer the petition was sufficient to show that in stringing the two additional wires as contemplated the plaintiff would not encroach upon any space [***7] beyond or without such prescriptive easement.

3. Nor would the existing easement be violated by the increased use which would result from stringing such additional wires in the manner alleged, such increase in use being a change in degree only and not in kind, and appearing to be reasonable. The petition of the telephone company stated a cause of action to enjoin the defendants from interfering with the plaintiff's agents in the installation of such additional wires, and the court did not err in overruling the general demurrer.

COUNSEL: *Swift Tyler and W. E. Armistead*, for plaintiffs in error.

Hirsch, Smith & Kilpatrick and E. D. Smith Jr., contra.

JUDGES: Bell, Justice. All the Justices concur.

OPINION BY: BELL

OPINION

[*666] [**792] 1. While the petition alleged that the tract of land in question is claimed by J. J. Kerlin, and treats him as the owner of the fee, the suit was instituted against both him and his wife, and for convenience we may employ the term *defendants*, just as though they owned the land together. Also the parties will be designated herein according to their positions in the court below. It appears from the petition that, more than twenty [***8] years before the suit was filed, the plaintiff purchased from the Commercial Telephone Company a line of telephone poles and wires which was then in existence over and across the property now owned by the defendants, and which had been used by that company in the telephone business. The purchase included all of the franchises, pole lines, and rights of way of the Commercial Telephone Company; and the plaintiff from the time of such purchase has continuously used "said pole line and the wires thereon," and has continuously occupied the land for such use. It also appears that such occupancy has been open, notorious, exclusive, adverse, and peaceable, and accompanied by a claim of right. There is some discussion in the briefs in reference to prescription by possession for seven years under color of title; but the petition refers to no deed or writing [**793] as evidence of the plaintiff's purchase, and hence it discloses nothing which might be taken as color of title. Code, § 85-407; *Byrom v. Riley*, 154 Ga. 580 (114 S. E. 642). According to the allegations, however, the plaintiff acquired by adverse possession for twenty years a prescriptive easement over the defendants' [***9] land at least for the space actually occupied by the original telephone poles and the wires between them, together with the right of ingress and egress for the purpose of maintenance and repair. Code, §§ 85-401, 85-402, 85-403, 85-406, 85-409. Counsel for the defendants apparently concede that the petition does show an easement [*667] to this extent, devoting their argument mainly to other, though related, questions. So far as necessary, these questions will be stated and dealt with in succeeding divisions of this opinion.

2. The petition shows that from the time of the original use by the plaintiff, the claimed easement or right of way embraced approximately twelve telephone poles, and wires attached to and running between them, the number of wires not being stated. The plaintiff proposed to string upon "said pole line" two more wires, which are alleged to be necessary in the conduct of its business. [HN1] In order to acquire a prescriptive title by virtue of possession alone for twenty years, such possession must be actual, and the prescription will not extend beyond "the *possessio pedis*." *Tillman v. Bomar*, 134 Ga. 660 (5) (68 S. E. 504); *Baker v. White*, 136 [***10] Ga. 541 (71 S. E. 871); *Rock Run Iron Co. v. Heath*, 155 Ga. 95 (2) (116 S. E. 590). The defendants invoke this principle, and contend that the petition does not show that the two additional wires, if strung as proposed, would be placed within the physical realm of the existing prescriptive easement; and if we do not misconceive their contention, it goes to the extent of insisting that, as related to the right to use any space for the location of equipment such as poles or wires, the easement is limited to such space as was actually occupied by specific poles and

be permissible, even though it did constitute only a change in degree; but since we must know that the addition of only two wires in the manner alleged would not be unreasonable or abnormal and would amount to a change in degree only, we are of the opinion that the right to attach them would come within the existing prescriptive easement, and that on proof of the allegations the plaintiff would be entitled to injunction to restrain the alleged interference on the part of the defendants. On the general subject, see *Western Union Telegraph Co. v. Polhemus*, 178 Fed. 904; *Standard Oil Co. v. Buchi*, 72 N. J. Eq. 492 (66 Atl. 427); *Crosier v. Shack*, 213 Mass. 253 (100 N. E. 607, L. R. A. 1918A, 260); *Mahon v. Tully*, 245 Mass. 571 (139 N. E. 797); *Frazier v. East Tennessee Telephone & Telegraph Co.*, 115 Tenn. 416 (90 S. W. 620, 3 L. R. A. (N. S.) 323, 112 Am. St. R. 856); *Hobbs v. Long Distance Telephone [***17] & Telegraph Co.*, 147 Ala. 393 (41 So. 1003, 7 L. R. A. (N. S.) 87); [**795] *Mayor &c. of Canton v. Canton Cotton Warehouse Co.*, 84 Miss. 268 (36 So. 266, 65 L. R. A. 561, 105 Am. St. R. 428); *City of Newark v. Central R. Co.*, 267 U.S. 377 (45 Sup. Ct. 328, 69 L. ed. 666). In view of what has been said, the petition stated a cause of action, regardless of the allegations in reference to the tree the branches of which the petition alleged were touching some of the wires and constituting a danger to the telephone service; and since counsel for the defendants (the plaintiffs in error) virtually concede in their brief that the plaintiff would have the right to clear this obstruction, though insisting that the petition fails to show any intended interference as to this matter, we do not deem it necessary to determine the force or effect of these averments toward the statement of a cause of action. [HN2] If a petition states a [*671] cause of action for any part of the relief sought, it is proper to overrule a mere general demurrer. *Blaylock v. Hackel*, 164 Ga. 257 (5) (138 S. E. 333). [***18]

Judgment affirmed.

1 of 1 DOCUMENT

George L. HAYES and Dorothea M. Hayes, Petitioners-Appellants, v. CITY OF
LOVELAND, Colorado, a Municipal corporation, Respondent-Appellee

No. 82CA0059

Court of Appeals of Colorado, Division Three

651 P.2d 466; 1982 Colo. App. LEXIS 829

September 2, 1982

PRIOR HISTORY: [**1] Appeal from the District Court of Larimer County. Honorable William F. Dressel, Judge.

DISPOSITION: Judgment Affirmed.

CASE SUMMARY:

PROCEDURAL POSTURE: Petitioner landowners appealed from a judgment of the District Court of Larimer County (Colorado) in this inverse condemnation suit against respondent city. The landowners sought damages based on the city's reconstruction of a power line running across an easement on their property that the city had acquired by prescription. The trial court granted the city's motion for summary judgment.

OVERVIEW: The landowners argued that the city's new power line amounted to an increased and therefore compensable burden on their land, and that they were entitled to damages. The landowners conceded that the property was subject to the city's utility easement, and they made no claim for compensation in connection with the original construction of the power line or use of the easement within its scope. It was uncontested that the reconstruction of the power line was a normal and usual evolution for its type. The reconstruction of the power line was therefore a change in the degree of use, not the kind of use, and was within the scope of the easement that burdened the property at the time the landowners acquired it. There was no evidence to support the contention that the burden on the servient tenement had increased. The court also rejected the landowners' alternative argument that the land abutting the easement suffered compensable damage due to its proximity to the reconstructed power line and the impairment of view because of the taller pole and additional conductors. The court affirmed, holding that the trial court properly concluded that the landowners had no right to compensation.

OUTCOME: The court affirmed the summary judgment in favor of the city on the landowner's inverse condemnation claim.

CORE TERMS: power line, easement, pole, steel, servient tenement, reconstruction, conductors, dominant estate, prescription, compensable, enjoyment, evolution, kilovolt, servient, space, reconstructed, taller

LexisNexis(R) Headnotes

Energy & Utilities Law > Transportation & Pipelines > Easements & Rights of Way
Energy & Utilities Law > Transportation & Pipelines > Eminent Domain Proceedings
Real Property Law > Limited Use Rights > General Overview

[HN1] To establish a de facto taking of their land, the owners of the servient estate must demonstrate that exceptional circumstances have substantially deprived them of the beneficial use and enjoyment of their property beyond the limits of the easement. The owner of the dominant estate may do whatever is reasonably necessary for the enjoyment of the easement.

including repairs, ingress and egress, with space therefor as exigency may show, provided the owner of the dominant estate does not unnecessarily inconvenience the owner of the servient estate and provided use of the easement is not expanded.

Real Property Law > Limited Use Rights > Easements > Creation > Easement by Prescription

[HN2] In determining whether an additional use is permissible under an easement acquired by prescription, it is necessary to compare the use acquired with the additional use with respect to their physical character, their purpose, and the relative burden to the servient tenement. In addition, the needs arising from normal evolution in the use of the dominant tenement and the effect of this increase upon the servient tenement must be considered.

Governments > Public Improvements > General Overview

Real Property Law > Torts > Nuisance > General Overview

[HN3] In order to be entitled to recover damages based on a modification of a public improvement, it must be shown that the damages are different in kind, rather than degree, from the damages sustained by the general public.

COUNSEL: Chilson & Stanton, P.C., John H. Chilson, Loveland, Colorado, Attorneys for Petitioners-Appellants.

Randy L. Williams, Loveland, Colorado, Attorney for Respondent-Appellee

JUDGES: Judge Kelly, Judge Pierce and Judge Kirshbaum concur.

OPINION BY: KLUY

OPINION

[*467] This inverse condemnation suit against the City of Loveland, George L. Hayes and Dorothea M. Hayes seek damages based on the City's reconstruction of a power line running across an easement on the Hayes' property acquired by the City by prescription. The trial court granted the City's motion for summary judgment. On appeal by petitioners, we affirm.

The petitioners first argue that the new power line constitutes an increased and therefore compensable burden upon their land, and that they are entitled to damages to the remainder of their property. The petitioners concede that their property is subject to the City's easement, and they make no claim for compensation in connection with the original construction of the power line or use of the easement within its scope. See *Rogers v. Lower Merion*, [**2] 63 Cal. 2d 116, 165 P.2d 88 (1977); *Take v. City of Greater N. Colo.*, App. 337, 504 P.2d 1117 (1972).

The following facts are undisputed. At the time petitioners acquired the property in question, two power lines owned by the [*468] City were in place and in operation and use upon the property. One of these lines carried 115 kilovolts of electricity, and consisted of three conductors placed on wood pole H-frame structures. In 1980, the City reconstructed the power line, removing the wood H-frame pole structure and installing a replacement steel pole. The steel structure is taller than the wood H-frame structure, and, although the voltage carried by the power line was not changed, three additional conductors were affixed to the steel pole. The steel pole occupies less physical space on the ground than the pole it replaced, and requires no additional land for its safe operation and maintenance.

[HN1] To establish a de facto taking of their land, the owners of the servient estate must demonstrate that exceptional circumstances have substantially deprived them of the beneficial use and enjoyment of their property beyond the limits of the easement. *West Penn*, [**3] 36 Pa. Commw. Ct. 16, 387 A.2d 1316 (1978). The owner of the dominant estate may do whatever is reasonably necessary for the enjoyment of the easement, including repairs, ingress and egress, with space therefor as exigency may show, provided the owner of the dominant estate does not unnecessarily inconvenience the owner of the servient estate and provided use of the easement is not expanded. *Shrill v. Rapavardi*, 33 Colo. App. 148, 517 P.2d 860 (1973); see also *Westland Nursing Home, Inc. v. Banson*, 33 Colo. App. 245, 517 P.2d 862 (1974).

[HN2] In determining whether an additional use is permissible under an easement acquired by prescription, it is necessary to compare the use acquired with the additional use with respect to their physical character, their purpose, and the relative burden to the servient tenement. In addition, the needs arising from normal evolution in the use of the dominant tenement and the effect of this increase upon the servient tenement must be considered. See *Restatement of Property*, §§ 478 and 479.

Here, it is uncontroverted that the reconstruction of the 115 kilovolt power line was a normal and usual evolution and development [**4] for this type of power line. The reconstruction of the power line by the City is, therefore, a change in the

degree of use, not the kind of use, and is within the scope of the easement which burdened the property at the time of the petitioners' acquisition. See *Minnesota Power Cooperative, Inc. v. Lake Shore Properties*, 295 N.W.2d 122 (N.D. 1980); *West Penn Power Co. v. Brant, supra*; *Humphries v. Georgia Power Co.*, 224 Ga. 128, 160 S.E.2d 351 (1968). There is no evidence in the record to support petitioners' contention that the burden on their servient tenement has increased. The trial court so ruled, and properly concluded that the petitioners have no right to compensation.

Alternatively, petitioners claim that their land abutting the easement has suffered compensable damage by reason of its proximity to the reconstructed power line and the impairment of view because of the taller pole and additional conductors. We find no merit in this argument.

[HN3] In order to be entitled to recover damages based on a modification of a public improvement, it must be shown that the damages are different in kind, rather than degree, from the damages sustained by the general public. *Majestic [**5] Heights Co. v. Board of County Commissioners*, 173 Colo. 178, 476 P.2d 745 (1970); *Troiano v. Colorado Department of Highways*, 170 Colo. 484, 463 P.2d 448 (1969). We conclude, as did the trial court, that the petitioners have not met the tests of Troiano.

The record does not substantiate the petitioners' other arguments.

Judgment affirmed.

JUDGE PILRCE and JUDGE KIRSHBAUM concur.

KERLIN et al. v. SOUTHERN BELL TELEPHONE AND TELEGRAPH COMPANY

No. 13483

Supreme Court of Georgia

191 Ga. 663; 13 S.E.2d 790; 1941 Ga. LEXIS 368

March 12, 1941, Decided

PRIOR HISTORY: [***1] Injunction. Before Judge Davis. Clayton superior court. June 24, 1940.

Southern Bell Telephone and Telegraph Company filed a suit for injunction against J. J. Kerlin and his wife. The petition alleges that J. J. Kerlin claims to own, and with his wife occupies, a described tract of land in Clayton County, across which the plaintiff operates a telephone line; that of this line approximately twelve telephone poles and the wires attached thereto are situated upon the land so occupied by the defendants; that the plaintiff desired to string two additional wires over and across this tract, and was about to go on the land for that purpose and for the purpose of maintaining "such telephone line" and clearing the same of obstructions, but that the defendants objected and threatened to use force to prevent the plaintiff from entering upon the land for such purposes. It was to restrain such interference on the part of the defendants that injunction was sought. After the petition was amended a renewed general demurrer attacking the petition for various reasons was overruled, and the defendants excepted.

Stated more fully, the allegations were as follows: The plaintiff is a telephone [***2] company, and as such maintains a system of exchanges and lines throughout the State of Georgia and other southern States, by means of which it furnishes to its subscribers and patrons a comprehensive telephone service both intrastate and interstate. Before June 30, 1905, Commercial Telephone Company, a corporation existing under the laws of Georgia, constructed at great cost a line of telephone poles, and wires between said poles, over and across the property now owned by the defendant J. J. Kerlin. This line of poles and the wires strung thereon were used by said company in its general telephone business. On May 30, 1905, the plaintiff purchased from said company all of its properties, franchises, pole lines, rights of way, and all property of every kind belonging to it, excepting only cash on hand, book accounts, and real estate. Since May 30, 1905, the plaintiff has owned, operated, and maintained said pole line over and across the property now owned by the defendant, and has continuously used said pole line and the wires thereon in its business of rendering general telephone communication service. The plaintiff has continuously occupied the land upon which said pole line is [***3] situated since May 30, 1905, and such occupancy has been open, notorious, adverse, and exclusive and under a claim of right. Said occupancy has been evidenced by the location on said property of approximately twelve telephone poles and such wires strung between said poles as are necessary to adequately accommodate the business of the plaintiff. Said pole line has been in continuous existence since originally constructed by the Commercial Telephone Company and since the purchase of said pole line from said company by the plaintiff, and the plaintiff has from time to time gone upon the said property whenever necessary for the purpose of attaching additional wires to those theretofore existing, or for the purpose of keeping the said pole line and wires clear from obstructions and encumbrances, such as growing trees and other obstructions. The plaintiff is now engaged in stringing an additional circuit of wires over the said pole line for use in its general business aforesaid, the construction of which additional circuit is essential to the plaintiff in maintaining its service to the public. Such circuit consists of two wires to be added to the number of existing circuits already strung [***4] on said pole line. The additional circuit is almost completely installed, except for that portion thereof which is to go across the property now occupied by the defendants.

On or about March 6, 1939, when the plaintiff's agents undertook to enter upon the property for the purpose of installing said additional circuit of wires and for the purpose of maintaining said pole line and keeping the same clear of obstructions, the defendants resisted the efforts of the plaintiff's agents so to come upon the said land and threatened to do them violence and bodily harm if they should enter thereon. The plaintiff has thus been prevented by the defendants from peaceably entering upon said premises for such purposes, and the plaintiff's agents can not so enter upon said property without danger to them of bodily harm. There is situated on the property of the defendant J. J. Kerlin a small locust tree, directly under the pole line and wires of the plaintiff company. This tree has now grown up and into the bottom two cross-arms and bottom two strands of wire now located upon said pole line. From the nature of the business carried on by the plaintiff, and from the nature of

a [***6] prescriptive easement over the defendants' land for the purpose of maintaining and operating a telephone line.

2. "Actual possession of lands is evidenced by inclosure, cultivation, or any use and occupation thereof which is so notorious as to attract the attention of every adverse claimant, and so exclusive as to prevent actual occupation by another." Where poles and wires were used in the operation of a telephone line or lines over the lands of another, they should be considered as having marked or outlined a general area in use according to the usual and ordinary manner; and if the outer limits of this space remained the same for the prescriptive period of twenty years, the resulting easement would apply at least to such general area, so that the stringing of additional wires anywhere therein consistently with customary location would be permissible as territorially within the easement, whether or not the identical space to be physically occupied by such wires had ever before been so occupied by other wires. As against general demurrer the petition was sufficient to show that in stringing the two additional wires as contemplated the plaintiff would not encroach upon any space [***7] beyond or without such prescriptive easement.

3. Nor would the existing easement be violated by the increased use which would result from stringing such additional wires in the manner alleged, such increase in use being a change in degree only and not in kind, and appearing to be reasonable. The petition of the telephone company stated a cause of action to enjoin the defendants from interfering with the plaintiff's agents in the installation of such additional wires, and the court did not err in overruling the general demurrer.

COUNSEL: *Swift Tyler and W. E. Armistead*, for plaintiffs in error.

Hirsch, Smith & Kilpatrick and E. D. Smith Jr., contra.

JUDGES: Bell, Justice. All the Justices concur.

OPINION BY: BELL

OPINION

[*666] [**792] 1. While the petition alleged that the tract of land in question is claimed by J. J. Kerlin, and treats him as the owner of the fee, the suit was instituted against both him and his wife, and for convenience we may employ the term *defendants*, just as though they owned the land together. Also the parties will be designated herein according to their positions in the court below. It appears from the petition that, more than twenty [***8] years before the suit was filed, the plaintiff purchased from the Commercial Telephone Company a line of telephone poles and wires which was then in existence over and across the property now owned by the defendants, and which had been used by that company in the telephone business. The purchase included all of the franchises, pole lines, and rights of way of the Commercial Telephone Company, and the plaintiff from the time of such purchase has continuously used "said pole line and the wires thereon," and has continuously occupied the land for such use. It also appears that such occupancy has been open, notorious, exclusive, adverse, and peaceable, and accompanied by a claim of right. There is some discussion in the briefs in reference to prescription by possession for seven years under color of title; but the petition refers to no deed or writing [**793] as evidence of the plaintiff's purchase, and hence it discloses nothing which might be taken as color of title. Code, § 85-407; *Dyrom v. Riley*, 154 Ga. 580 (114 S. E. 642). According to the allegations, however, the plaintiff acquired by adverse possession for twenty years a prescriptive easement over the defendants' [***9] land at least for the space actually occupied by the original telephone poles and the wires between them, together with the right of ingress and egress for the purpose of maintenance and repair. Code, §§ 85-401, 85-402, 85-403, 85-406, 85-409. Counsel for the defendants apparently concede that the petition does show an easement [*667] to this extent, devoting their argument mainly to other, though related, questions. So far as necessary, these questions will be stated and dealt with in succeeding divisions of this opinion.

2. The petition shows that from the time of the original use by the plaintiff, the claimed easement or right of way embraced approximately twelve telephone poles, and wires attached to and running between them, the number of wires not being stated. The plaintiff proposed to string upon "said pole line" two more wires, which are alleged to be necessary in the conduct of its business. [HN1] In order to acquire a prescriptive title by virtue of possession alone for twenty years, such possession must be actual, and the prescription will not extend beyond "the possessio pedis." *Tillman v. Bomar*, 134 Ga. 660 (5) (68 S. E. 504); *Baker v. White*, 136 [***10] Ga. 541 (71 S. E. 871); *Rock Run Iron Co. v. Heath*, 155 Ga. 95 (2) (116 S. E. 590). The defendants invoke this principle, and contend that the petition does not show that the two additional wires, if strung as proposed, would be placed within the physical realm of the existing prescriptive easement; and if we do not misconceive their contention, it goes to the extent of insisting that, as related to the right to use any space for the location of equipment such as poles or wires, the easement is limited to such space as was actually occupied by specific poles and

Executive Summary

This report presents the result of an independent investigation performed by Navigant Consulting, Inc. (NCI) of feeder performance and supply options for customers served by Sulphur Springs Valley Electric Cooperatives, Inc.'s (SSVEC) V-7 distribution feeder and Huachuca substation. The investigation responds to a mandate outlined in an Arizona Corporation Commission (ACC) Order dated August 17, 2009.¹ Our analysis assesses existing feeder performance and the capability of the existing system to serve current and future electric demand. It includes identification of potentially feasible alternatives to mitigate current performance issues and to identify solutions to serve customers over the next 20 years.

All findings presented herein were prepared independently, without bias or prior knowledge of feeder performance issues or concerns raised by customers and other interested parties. Methods employed to evaluate performance and supply alternatives are consistent with common utility practices and applicable industry design, performance and evaluation standards. The analysis was completed without direct or indirect participation or input from SSVEC staff, management or its customers.² Solutions considered include a broad range of electric delivery, demand-side management, distributed generation and renewable energy options. However, these options were limited to commercially available mature technologies versus those which have not advanced beyond pilot or demonstration phases.

The V-7 feeder serves over 2400 electric meters along 360 miles of lines, and is well above the average line length of other SSVEC feeders. Reliability performance as measured by total outages and duration is inferior to other SSVEC feeders. Table ES - 1 presents average outage hours per customer for the last ten years. However, the large majority of these outages affected less than three to five customers, and these were caused mostly by lightning and animal-related events. While outage rates are high, NCI does not view current feeder outage performance to be unusual for a line with the distance and exposure of the V-7 feeder; among other factors, the remote service territory requires crews to travel longer distances to restore service, which increases average consumer outage duration.

¹ The section of the ACC's Order that governs the conduct of NCI's study is summarized in the following excerpt: "Sulphur Springs Valley Electric Cooperative, Inc. as a matter of compliance, shall docket by December 31, 2009, a feasibility study prepared by an independent third party that includes alternatives (including use of distributed renewable energy) that could mitigate the need for construction of Sulphur Springs Valley Electric Cooperative, Inc.'s proposed 69kV project."

² An independent engineering and consulting firm, TRC Solutions, was engaged by SSVEC to respond to information and data requests submitted by NCI.

be permissible, even though it did constitute only a change in degree; but since we must know that the addition of only two wires in the manner alleged would not be unreasonable or abnormal and would amount to a change in degree only, we are of the opinion that the right to attach them would come within the existing prescriptive easement, and that on proof of the allegations the plaintiff would be entitled to injunction to restrain the alleged interference on the part of the defendants. On the general subject, see *Western Union Telegraph Co. v. Polhemus*, 178 Fed. 904; *Standard Oil Co. v. Buchi*, 72 N. J. Eq. 492 (66 Atl. 427); *Crosier v. Shack*, 213 Mass. 253 (100 N. E. 607, L. R. A. 1918A, 260); *Mahon v. Tully*, 245 Mass. 571 (139 N. E. 797); *Frazier v. East Tennessee Telephone & Telegraph Co.*, 115 Tenn. 416 (90 S. W. 620, 3 L. R. A. (N. S.) 323, 112 Am. St. R. 856); *Hobbs v. Long Distance Telephone [***17] & Telegraph Co.*, 147 Ala. 393 (41 So. 1003, 7 L. R. A. (N. S.) 87); [**795] *Mayor &c. of Canton v. Canton Cotton Warehouse Co.*, 84 Miss. 268 (36 So. 266, 65 L. R. A. 561, 105 Am. St. R. 428); *City of Newark v. Central R. Co.*, 267 U.S. 377 (45 Sup. Ct. 328, 69 L. ed. 666). In view of what has been said, the petition stated a cause of action, regardless of the allegations in reference to the tree the branches of which the petition alleged were touching some of the wires and constituting a danger to the telephone service; and since counsel for the defendants (the plaintiffs in error) virtually concedes in their brief that the plaintiff would have the right to clear this obstruction, though insisting that the petition fails to show any intended interference as to this matter, we do not deem it necessary to determine the force or effect of these averments toward the statement of a cause of action. [HN2] If a petition states a [*671] cause of action for any part of the relief sought, it is proper to overrule a mere general demurrer. *Blaylock v. Hackel*, 164 Ga. 257 (5) (138 S. E. 333). [***18]

Judgment affirmed.

Stubbs & Schubart, P. C.

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April 14, 2010

MOUNTAIN EMPIRE ENGINEERING PROJECT
c/o Gail Getzwiller
P. O. Box, 815
Sonoita, AZ 85637

Re: Sulphur Springs Valley Electric Cooperative / Sonoita
Valley Reliability Project

Dear Gail:

Due to our focus on condemnation or eminent domain proceedings, you requested my comments to the letter written by Robert Savage on behalf of Sulphur Springs Valley Electric Cooperative (SSVEC). Rather than improve the existing 24.9kV transmission line to meet current and future needs, SSVEC desires to construct a new 69kV line along a different alignment. Your concern that this alternative 69kV transmission line far exceeds present or future residential needs and appears to be designed to furnish electricity for a proposed project, the Harshaw Mine, also known as The Hardshell Project. The letter authored by Robert Savage appears to be an effort to justify abandoning the existing 24.9kV transmission line in order to support the new alignment.

Robert Savage does an admirable job in describing SSVEC's rights for a perspective easement. SSVEC has an existing 24.9kV transmission and, as the letter points out, in some areas there are no memorialized easements acknowledging the right of possession. Nonetheless, possession exists and under the laws of the State, that prescriptive right ripens into a permanent easement with the passage of time. The SSVEC transmission line is openly visible, it has been continuously used and to the extent construction was without the permission of the owner, it is hostile to the title of the true owner. All of the elements for adverse possession exist. Without doubt, this right would be upheld by our courts.

Robert Savage further describes the fact that a prescriptive easement cannot be dramatically expanded beyond the scope of the historical use. The letter fails to analyze, though, whether merely increasing the carrying capacity of the existing transmission line is an unreasonable expansion which would require the acquisition of additional property rights. His case law analogy describing how a wall was prohibited where a mere access right was acquired provides no guidance. Increasing the conductivity of the existing line, by installing new wiring, requires no additional rights.

Stubbs & Schubart, P. C.

Attorneys and Counsellors at Law

MOUNTAIN EMPIRE ENGINEERING PROJECT
c/o Gail Getzwiller
Re: Sulphur Springs Valley Electric Cooperative /
Sonoita Valley Reliability Project

April 14, 2010
Page 2 of 2

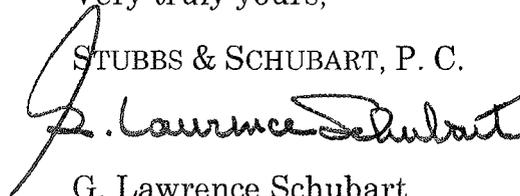
More importantly, even if there was an expansion of the easement, the letter fails to consider the deleterious effect of constructing a new line along a different alignment where one had not previously been contemplated, as opposed to the more minimal effect of improving the line where one has historically existed. Although some of the open space land has already been acquired by SSVEC, that alignment is not complete and requires land within improved neighborhoods. This law firm has been successful in arguing extensive severance damage award for high-voltage transmission lines due to the adverse effect to surrounding properties. See, *Selective Resources v. Superior Court*, 145 Ariz. 151, 700 P.2d 849 (1984). There should be significant resistance and expense in SSVEC seeking to acquire the necessary balance of land for the 69kV alignment.

In the absence of subterfuge to serve the Harshaw Mine there seems no justification for the abandonment of an existing transmission line when, in fact, adequate service can be provided by increasing the existing lines conductivity to meet present and anticipated future area needs.

If you have further questions, please do not hesitate to contact me.

Very truly yours,

STUBBS & SCHUBART, P. C.



G. Lawrence Schubart

GLS/bmmh

Attachment F

Together Green Grant Application

Project Title: Reduce Carbon Emissions: A Model for Rural Communities

Contact Information: Linda Kennedy, Director

Name of Organization: Appleton-Whittell Research Ranch of the National Audubon Society, Inc.

Address, City, State, ZIP Code: H.C. 1 Box 44, Elgin, AZ 85611

Project Leader: Jeanne-Marie O. Horsmann

Organizational Background: The mission of the Appleton-Whittell Research Ranch is to be a living laboratory to determine and demonstrate methods to safeguard and rehabilitate southwestern grasslands, and to assist policy makers and other citizens in the care and protection of our native ecosystems, natural resources, and quality of life. We have three overarching goals: Land Stewardship – Be a premier semi-arid grassland that fosters a natural diversity of native species; Research – Understand how grasslands and related ecosystems function, and to recognize the key elements that safeguard these ecosystems; Outreach and Education – Advocate for grassland ecosystems by encouraging citizens and policy makers to safeguard and rehabilitate native ecosystems throughout the region.

Project Summary: We will create a model for rural communities that will significantly reduce the threat of greenhouse gas emissions through production of electricity through alternative energy, by implementing energy efficiency upgrades on existing structures and by promoting energy efficient standards on new construction. We believe our rural community (Northeastern Santa Cruz County, Arizona) can generate the electricity we use through alternative energy technologies and energy efficient options, thereby reducing our dependence on electricity generated by fossil fuel consumption. We hope that, within 2 years, we will have commitments from 25% of the home and business owners to install systems that will produce at least 2kW each or significantly reduce consumption by increasing the energy efficiency of our homes and businesses. Within 10 years, we hope that 100% of homes and businesses in the area will be reducing greenhouse gas emissions through use of alternative energy sources or through passive techniques such as thermal mass walls, heavily insulated roofs or high performance windows.

Arizona has abundant sunlight, significant wind resources and access to other options including bio-fuels, however, there is no known model in the U.S. that offers guidance for a rural development of this scope. Issues that must be addressed include the interface with the local power cooperative, zoning and regulatory issues, educational efforts and funding mechanisms for residents, businesses and non-profit organizations.

We will develop a strategic plan to guide future direction and develop a grassroots educational network to facilitate information exchange and encourage individual conservation actions, thereby reducing our carbon footprint. Perhaps even more importantly, our experiences will be documented as a formal case study – our efforts will serve as a model for other rural communities therefore leveraging the impacts of this grant far beyond SE Arizona.

Need: Reduce Energy Use. Much of SE Arizona's electricity is produced by coal powered plants which produce greenhouse gasses, impact scarce water resources and require ever increasing transmission corridors which have negative impacts on wildlife. Rural communities lack a comprehensive guide for large scale implementation of conservation efforts – alternative energy production and energy efficiency options. There is no model available to help answer questions such as: "How can hundreds of small generation stations be incorporated into an existing power grid?", "Will energy producers be violating zoning ordinances if excess energy is "sold" back to the power company?", "What are the most effective methods of alternative energy production for our area?" We need professional experience to guide us, coordination of our efforts to efficiently involve residents that are widely dispersed throughout the 350 square mile service area and a compiler to generate a case study to share our experience.

We're optimistic that: 1) the strategic plan in conjunction with our outreach efforts will provide a model for rural generation of green renewable energy which can be replicated through rural Arizona and the U.S.; 2) by 2011, residents and businesses of NE Santa Cruz County will reduce the total demand on energy derived from coal by implementation of energy efficiency projects and by producing a minimum of 1mW of clean energy; 3) by 2012, Santa Cruz County will have adopted planning and zoning ordinances that encourage incorporation of "green" technology (passive or active) into construction requirements for new homes and businesses; 4) by 2019, residents and businesses of NE Santa Cruz County, in addition to conservation efforts to reduce energy consumption of coal generated electricity, will be producing a minimum of 10mW of clean energy annually.

To accomplish these objectives, we will work closely with a consulting firm to develop a strategic plan and program design. We will outline appropriate mechanisms for interface with our local power supplier, discover means to enable lower income families and individuals to insulate their homes, install solar hot water heaters, incorporate alternative energy generation sources; provide innovative educational opportunities for the area's population through expositions, workshops, printed literature, and directed websites to encourage conservation, sustainability, conversion to green, renewable energy options, and promote adoption of policies and ordinances to support "green" development.

Audience : This project will touch unique local audiences and the model developed will reach even more diverse audiences. Although many local area residents are interested in conservation, relatively few are active in the traditional conservation community. NE Santa Cruz County borders Mexico, and has a strong Hispanic community. The traditional land use has been ranching, but the agreeable climate and spectacular scenery has promoted a migration from areas quite different from SE Arizona. Most residents live outside of incorporated areas. This combination of factors has produced an audience that is disparate in backgrounds, education and economic status. This project will unite the community through shared experiences and empower individuals to make sound conservation decisions.

Activities: We will offer a graduate fellowship to jointly assist with coordination of activities and prepare a case study that will serve as a model for other rural communities. This fellowship will be awarded through the Research Ranch's Apacheria Fellowship program. We will engage the services of a professional help us design a strategic plan and project description that will direct future actions so that our activities are the most effective and efficient. The following actions could be part of this plan: 1) Discover the level of knowledge and interest in the local population through surveys; 2) Work with local county officials to address code issues; 3) Coordinate with local power cooperative to address compatibility issues; 4) Engage local commercial enterprises to place renewable energy systems on their businesses; 5) Educate and encourage local residents who are financially able to implement construction of renewable energy projects; 6) Develop worksheet to serve as a template for implementing renewable energy systems; 7) Engage local community organizations to assist with educational opportunities; 8) Discover funding opportunities for low-income residents and non-profit organizations; and 9) Host workshops or seminars showcasing sustainable energy generation and passive conservation practices.

Team members will cultivate relationships with the local cooperative (board members, management and staff) to facilitate exchange of information and planning efforts. Partnerships with other groups (homeowner associations, cooperatives, academic institutions) will be developed to further enhance our ability to reach local residents. We will explore options to share our efforts with a wider audience.

Indicators of Success: Reduction in CO₂ emissions will be the true measure of success of this entire project. A critical milestone will be completion and application of the strategic plan. Metrics will include number of attendees at educational events and, more importantly, number of entities (home or business owners) who pledge to install alternative energy systems, to make energy efficient changes in their lifestyle, or to participate in local "cooperative" ventures. Another indicator of success will be the successful implementation of county ordinances supporting renewable energy and conservation of energy through passive building techniques.

If our community can generate even a nominal amount of clean electricity, 0.5mW (250 homes with 2kW systems), then we will produce 3mW hours per day (based on 6 hours daylight). Compared to coal, solar prevents .95 tons of CO₂ from being released for each mW(hr) of electricity produced – a net reduction of nearly 3 tons per day!

Project Evaluation: Ideally, we could conduct a full scale research investigation that would include tracking the total and individual electrical usages and genesis of that electricity before the plan and at various stages during implementation. That is beyond the scope of this grant application, however we would certainly be amenable to working with academics on such an investigation.

Realistically, we will work closely with professionals developing the strategic plan to be certain the result reflects the needs of the community. Confidentiality requirements will limit access to some data, but we feel that carefully designed surveys and sampling methods will give us information that could be extrapolated to cover the project area on 1) kW hours of electricity previously used, 2) efforts used to conserve (both passive and active), and 3) kW hours produced using alternative energy. We will conduct area wide surveys to determine the needs of the community prior to implementation of the plan and at the end of the first year to determine the success of our outreach efforts. We will conduct exit interviews at workshops and seminars that can be used to further refine our message. We will work closely with our local cooperative to be certain that our actions are having the desired effects of reducing dependence on electricity generated from coal and therefore reducing carbon emissions. Throughout the grant cycle, we will work with the TogetherGreen project team to be certain that our evaluation efforts are appropriate.

Innovation and Strategic Impact: We didn't realize what an innovative project this was until we started searching for other examples to guide us. A review of the literature and contact with energy professionals revealed that, although relatively common in a few European nations, there is no model in the U.S. for rural generation of renewable electricity by individuals on this scale. Consequently, this venture has implications far beyond the physical boundaries of the project area. Our model could be used throughout rural U.S. Just think of it – hundreds of small systems supplying renewable electricity used primarily on site, with excess fed into energy grids for use by others. Local “clean” generating systems will lessen carbon emissions, reduce the amount of water needed for traditional generation, and reduce peak-period surges which require commercial generating stations to overbuild. Added to the “green” energy will be reduction in electrical use due to adoption of energy efficiency options – insulation, energy efficient appliances, solar water heaters, more efficient windows. Impacts from our direct actions and from actions of those who benefit from our experience as documented in the case study will result in significant reductions in greenhouse gas emissions far into the future.

Risks and Challenges: The biggest challenge to achieving our goals is that we are not professionals in this field! We have experience in many areas, but none of the project team has a background in this type of endeavor. We are addressing this challenge by asking for this grant to provide professional planning, coordination and documentation; doing a lot of research; and reaching out to experts.

Our local electrical cooperative has been reticent about endorsing this project. We meet with them frequently and are slowly convincing them that we are serious about making NE Santa Cruz County self-sustaining with respect to generation of electrical power.

Regulations exist that prohibit residences and commercial businesses from producing greater than 125% of their current electrical load. We will work with regulatory bodies on this issue.

Going green isn't cheap, and even though there are rebates and tax credits available, there is still a significant financial gap between what many residents can afford and what is needed. We will work with Congresswoman Gabrielle Giffords' office to learn of all available avenues regarding incentive funds.

Communication is a challenge as our community is dispersed, with only one small incorporated town and many miles separating homes. We will address this problem through website based information, e-lists, advertising, and through bulk mailings (on reused, recycled paper of course!) to announce events and opportunities.

There could be a lag between intent and implementation – supplies and installers are in demand and it's sometimes tough to compete with urban areas.

Sustainability/Replicability: This is not a one-year project but it will produce a replicable model that will reach far beyond NE Santa Cruz County, AZ. We believe that through our example, other rural groups will be encouraged to implement large scale renewable energy production based on small scale generation systems and link this production to enhanced energy efficiency through retro-fits of existing buildings and new construction. We anticipate that many counties will be encouraged to alter zoning regulations that create roadblocks to small-scale generation of renewable energy. The model we develop will be a case study and will result in submission to a professional journal. Information developed will be available on the SCCF website, with links from the Research Ranch and other websites.

This is just the first stage towards our vision of sustainability for NE Santa Cruz County. We will cultivate partnerships with local organizations with similar goals, including the City of Patagonia AZ. Additional funding will be needed for complete implementation, and we are investigating additional grants sources. This project will continue for many years as we move towards sustainability in energy generation and other natural resources in NE Santa Cruz County.

Both SCCF and the Research Ranch have been active in NE Santa Cruz County for many years – and intend to continue! We will work together to implement and sustain this program. It makes sense, and now is the time to start!

TogetherGreen 2010 Innovation Grants Application Summary

Project Title: Reduce Carbon Emissions: Year Two

BACKGROUND INFORMATION

Contact Information: Linda Kennedy

Name of Organization (this should be the name of the applying Audubon group):
Appleton-Whittell Research Ranch of the National Audubon Society

Address, City, State, ZIP Code:
HC 1 Box 44, 366 Research Ranch Road, Elgin AZ 85611

Project Leader: Jeanne-Marie O. Horsmann

Project Leader E-mail: Bugle2@earthlink.net

Organizational Background (200 words):

The mission of the Appleton-Whittell Research Ranch is to be a living laboratory to determine and demonstrate methods to safeguard and rehabilitate southwestern grasslands, and to assist policy makers and other citizens in the care and protection of our native ecosystems, natural resources, and quality of life. We have three overarching goals: Land Stewardship – Be a premier semi-arid grassland that fosters a natural diversity of native species; Research – Understand how grasslands and related ecosystems function, and to recognize the key elements that safeguard these ecosystems; Outreach and Education – Advocate for grassland ecosystems by encouraging citizens and policy makers to safeguard and rehabilitate native ecosystems throughout the region.

The Research Ranch is an 8000 acre sanctuary for native biota and an ecological research facility in southeastern Arizona that has been managed by Audubon since 1980. Staff consists of two fulltime and one part-time employee. The annual budget ranges from \$250-300K. The director has experience administering grants for conservation, research and educational projects. Examples include a \$21,000 grant for water harvesting (NRCS), a \$50,000/year grant to study wildfire (AZ G&F), a \$25,000/year grant (Audubon-at-Home/NRCS) for outreach to ranchette owners AND the 2009 TogetherGreen Innovation grant for \$24,200..

PROJECT INFORMATION

Project Summary:

This is Year II of a Six Year plan to create a model for rural communities to reduce greenhouse gas emissions through reduction of energy purchased from coal plants. The project emphasizes: 1) energy conservation; 2) implementing energy efficiency upgrades on existing structures; 3) installation of renewable energy systems; and 4) energy efficient standards on new construction.

We do know that members of our community—the Northeast corner of Santa Cruz County, AZ-- want to adopt alternative energy technologies and energy efficient options. Energy EXPO III, implemented in March 2010, demonstrated this interest.

The Six Year Strategic Plan resulting from the Energy Summit of interested stakeholders, a public survey, informal input to project leaders at 2010's Energy EXPO III and our own evaluation of the project's successes and limitations outlines project goals for Year II. The proposed TogetherGreen grant of \$18,650 will enable the project to:

1. Advance Project Year II goals outlined in the strategic plan developed with 2009-10 TG grant assistance;
2. Complete Energy EXPO IV (through a contract with an event coordinator), expanding its outreach, numbers of vendors and presenters and ending with a net fund balance;
3. Assist SIX individuals and/or businesses, through use of a short term project coordinator contract, to complete potential renewable energy, energy efficiency and weatherization projects, using existing funding mechanisms and implementation strategies;
4. Implement Energy Summit II;
5. Hold a first meeting of the project Education Task Force to implement education goals and;
6. Complete research on priorities for outreach to schools (principals, school board members, educators and students), strategy for using energy pledges, roles for major potential partnering organizations and a target list of such potential partners; and an inventory of funding tools available for residents and businesses.

Need:

Most of SE Arizona's electricity is produced by coal powered plants which produce greenhouse gasses, impact scarce water resources and require ever increasing transmission corridors which have negative impacts on wildlife. Our rural community is struggling with its efforts to reduce the use of energy generated from fossil fuels and with the concomitant increases in the costs of that energy. Many businesses are stressed by the increasing costs of electricity, yet lack the knowledge base to access the tools available to implement conservation and/or renewable energy solutions.

For instance, there is a critical need for professional assistance in researching available loan and grant opportunities, and guiding application for these opportunities. The community enthusiastically supports educational opportunities on saving energy through renewables or conservation; the demands and opportunities have overwhelmed the available volunteers. Staff is desperately needed to provide continuity and maintain momentum.

Objectives

Our objectives for Year Two are based on the strategic plan developed in Year One of this project with input from community leaders (2009 Energy Summit), residents and businesses (survey, 2010 Energy EXPO). They are:

Marketing and Project Implementation: 1) Organize and implement Energy EXPO IV with expanded vendor participation and wider audience and develop an updated mailing/contact list (currently at 200 persons) of businesses and residents interested in energy projects (efficiency improvements, renewable energy systems and simple weatherization retrofits); 3) Develop specific plans for SIX potential projects that could be implemented in Year II; 4) Identify SIX additional projects that may take longer to implement (i.e. need grant/loan applications).

Advocacy: Outreach to community members in support of the project to cultivate and eventually identify key partnering organizations; maintain momentum and enthusiasm in the community and implement Energy Summit II.

Sustainability objectives: Hold the first meeting of the Education Task Force, suggested in the Energy Summit I; complete research on several outreach initiatives mentioned at the Summit.

Audience

Because of the success of the Energy Expo in 2009/2010, this project is beginning to touch a unique local audience in NE Santa Cruz County AZ. This audience which is partly Hispanic due to historical geographic and social relationships with Mexico, is disparate in background and economic status.

The Energy Expo is the primary and, importantly, the already-tested means of marketing the project. It shows off practical ideas for implementation. It attracts persons who have developed an interest in the marketplace and share with the project that they have an interest.

Energy Expo has taken place for three years now. It constitutes the project's primary marketing device. It draws in numbers of vendors, people, trainers and practitioners. It may help the project to expand into other parts of the county and state. Residents that have not previously been identified as part of the "conservation community" are being empowered to take action with the current list of interested persons topping 200.

This year, four businesses indicated a strong interest in doing at least simple energy efficiency improvements. They are: Sonoita Hardware, Fuel Stop, Duquesne House (a Patagonia B&B) and the Sonoita Fairgrounds.

Activities

Much of our initial attention will focus on filling short time contractor needs that will assist in implementation of: 1) 2011 Energy EXPO IV and 2) identification and completion of potential projects. These actions and projects are outlined below in the Timeline section, below, and include recruiting staff members, building an Energy Education Task Force, convening a second Energy Summit, hosting Energy EXPO 4, completion of first energy saving projects, and holding educational workshop(s).

Indicators of Success

An important milestone will be Energy EXPO IV in 2011 as it is the primary marketing Metrics will include number of attendees and vendors and implementation with positive fund balance.

Identification and successful implementation of SIX projects for energy efficiency and/or renewable systems with before and after results for energy usage reduction.

Identification of SIX additional projects for the following year.

Implementation of Energy Summit II.

Completion of first Education Task Force meeting.

Reduction in CO2 emissions will be the true measure of success of this entire project, but difficult to quantify in the short term. However, if our community can generate even a nominal amount of clean electricity, 0.5mW, then we will produce 3mW(hrs) per day (based on 6 hours daylight). Compared to coal, solar prevents .95 tons of CO2 from being released for each mW(hr) of electricity produced – a net reduction of nearly 3 tons per day! On top of that, any energy efficiencies and reductions will further reduce CO2 emissions!

Project Evaluation

Evaluation will be based upon the project completing what it says it will complete in the time frame expected.

Confidentiality requirements will limit access to some data, but we feel that carefully designed surveys and sampling methods will yield data that could be extrapolated to cover the project area on: 1) kW hours of electricity previously used, 2) efforts used to conserve (both passive and active), and 3) kW hours produced using alternative energy. We will conduct area wide surveys to determine the needs of the community prior to

implementation of the plan and at the end of the first year to determine the success of our outreach efforts. We will conduct exit interviews at workshops and seminars to further refine our message. We will work closely with our local cooperative to be certain that our actions are having the desired effects of reducing dependence on electricity generated from coal and therefore reducing carbon emissions. Throughout the grant cycle, we will work with the TogetherGreen project team to be certain that our evaluation efforts are appropriate.

Innovation and Strategic Impact

Going into the second year of a long term project, we have found that our efforts are garnering attention of the rest of our county and the adjoining counties. Already we have created interest outside of our project area identified in the first year. This project has implications beyond the physical boundaries of the project area. Our model could be used throughout rural U.S. Picture thousands of small systems supplying renewable electricity used primarily on site, with excess fed into energy grids for use by others as is the case in Gainesville, Florida. Local “clean” generating systems will lessen carbon emissions, reduce the amount of water needed for traditional generation, and reduce peak-period surges which require commercial generating stations to overbuild. Added to the “green” energy will be reduction in electrical use due to adoption of energy efficiency options – insulation, energy efficient appliances, solar water heaters, more efficient windows. Impacts from our direct actions and from actions of those who benefit from our experience as documented in the case study will be significant reductions in greenhouse gas emissions far into the future.

Risks and Challenges

The risks and challenges we anticipated last year were correct. “Our local electrical cooperative has been reticent about endorsing this project” was a direct quote from last year’s application, an understatement, as we have discovered. For example, their rebate program for renewable energy assistance has been suspended. We are working with them to advocate the critical importance of energy conservation and renewable energy in this area. Already we have made inroads with staff members who are supportive of our efforts.

Even though there are rebates and tax credits available, there is still a significant financial gap between what many residents can afford and what is needed; our survey shows this issue of affordability is a big one that the project must address. A large task in this year will be to work directly with interested individuals and businesses to develop economically viable solutions.

Communication is still a challenge in our dispersed, primarily rural community. Results of the survey (2009 project) have shown preferred ways to reach interested parties are web-based information and workshops, as are presented at Energy EXPO.

There is a lag between intent and implementation – supplies and installers are in demand and there is competition with urban areas near Tucson.

Finally, we really needed professional assistance in strategic planning and implementation. The project will need this kind of expertise in year II.

Project Team, Qualifications, and Roles

Linda Kennedy: (PhD botany); Director of Research Ranch; develops environmental education material and workshops; administers budgets and grants for research, conservation and environmental education; manages 8000 acre research facility.

Jeanne Horsmann: (BA chemistry, MBA strategic planning); organized Santa Cruz County Renewable Energy Expo; business manager for various TRW and Boeing government contracts (\$25K - \$33M).

Susan Scott: SCCF President. Levi-Strauss Human Resources Director (Retired); Intervenor, Arizona Corporation Commission. Member, Rotary Club.

Rob Horsmann: (BS Nursing, MS Nursing Community Health & Education, MS, Nursing Anesthesia); Cienega Watershed Partnership BOD; Navy Combat corpsman (FMF); Navy Special Operations; Chief, Department of Anesthesia, Shaw AFB.

Karen LaFrance – Strategic Planning Consultant, BA Mt Holyoke College, MA U of Nebraska, MURP U of Pittsburgh.

Sustainability/Replicability

We believe that sustainability depends on showing our growing market what can be done and what amount of money they can save on their utility bills. A successful implementation of Energy EXPO IV and providing technical support for several simple, but showcase projects with businesses and individuals in Year II, will help build momentum for a sustained effort.

The short term contractors that this 2010 grant will support will be invaluable in continuing project momentum. Continued project momentum will require volunteer coordination, engagement of residents and businesses, and cultivation of both the local power utilities and local governmental entities – all of which take focus by volunteer leadership with the assistance and advice of the proposed, short term contract workers.

We were successful in obtaining two additional grants this year, both from the Patagonia Regional Community Foundation, which indicates the beginnings of broad community support, an underpinning for sustained effort.

Timeline

Sept 2010: Engage strategic planning consultant and plan Energy Summit II; Develop Work Plans for Energy EXPO IV coordinator and project coordinator

Oct 2010: Recruit project contractor Energy EXPO IV

Nov 2010: Recruit project assistance contractor to implement energy-saving projects, including outreach to the four targeted businesses and two additional potential energy-saving projects; develop Work Plan.

Dec 2010: Energy Summit II

Mar 2011: Energy EXPO IV

July 2011: First Meeting, Energy Education TASK FORCE

July 2011: Completion of first energy saving projects

As needed: Educational workshop

Successes and Accomplishments Resulting from the 2009 TogetherGreen Grant:

Energy Summit I (17 community/county stake-holders participated)

Establishment of website: <http://pe4rc.org>

Survey (mailed to 1,988 box-holders and 380 e-mail addresses; 7.5% response)

Energy EXPO III: Raised \$3,652 cash plus \$3,227 in-kind or products. Several key grants—from the Patagonia Community Foundation (\$1200), from WalMart (\$500) and from the utility/co-op SSVEC (\$500)—were secured in support of the Expo.

Creation of Strategic Plan

Outreach and information distribution at local activities:

Workshops (renewable energy grants, water harvesting) held

Media coverage (including Audubon Magazine)

Meetings with Santa Cruz County governmental representatives to inform them of grant activities led to the initiation of a Green Building Program for the county

The above activities and successes have brought this project to the stage where dedicated staff support is needed to advance this project to the professional level. Volunteers will continue to be a strong element in this program – especially to provide mentoring and community connections.

PARTNER ORGANIZATION(S)

Partner's Role and Qualifications:

Our primary partner on this project is the Sonoita Crossroads Community Forum (SCCF), which is a 501(c) 3 organization through which all residents of northeastern Santa Cruz County may come together to voice concerns about the present and future conditions of their community, to discuss those concerns, to develop a consensus, and to communicate that consensus to government, business, and community groups. The annual operating budget ranges between \$4-10K and is the result of membership dues and contributions. SCCF has no staff, but an active Board and membership has contributed to many accomplishments, including development of the Comprehensive Plan for NE Santa Cruz County, adopted by the Santa Cruz County Board of Supervisors. In 2009, SCCF formed an Energy Subcommittee, whose first responsibility was a Santa Cruz Renewable Energy Exposition and whose members formed the project team for the 2009 grant. Most of the project team for the coming year are also members of this subcommittee.

Second Partner's Role and Qualifications:

The Cienega Watershed Partnership will not participate at the 30% level so is not considered a primary partner, but will assist by bringing our efforts to a wider audience. CWP is a 501(c) 3 organization created as an umbrella to coordinate the activities of two conservation groups, the Sonoita Valley Planning Partnership (SVPP) and the Cienega Corridor Conservation Council (4C). SVPP and 4C are comprised of citizens, public land users, environmental organizations, and government agency officials, with a shared goal of facilitating coordinated resource management.

4.1. PROJECT OVERVIEW

4.1.1. Executive Summary

We propose to reduce our annual expenditures for electricity and reduce carbon emissions by installation of two renewable energy generation systems at the Appleton-Whittell Research Ranch of the National Audubon Society, Inc. Total cost of this project will be \$91,121 of which 50% (\$45,560.50) will be provided via rebates from Sulphur Springs Valley Electric Cooperative (SSVEC). We are asking for \$45,560.50 through the ARRA program. This project will directly benefit the Research Ranch financially and will benefit the environment by reducing the amount of carbon released into the atmosphere by generation of electricity from combustion of coal. Through our education and outreach efforts we will be able to promote the economic and environmental benefits of generating renewable energy on site using the Ranch as a demonstration and education center, and statewide via Audubon Arizona's newsletter, which reaches 7,000 households, further leveraging the impact of this project.

There are two building complexes on the Research Ranch, and by installation of one photovoltaic system on the Grassland Center and another near the laboratory, we will generate 100% of the total amount of electricity used at the Grassland Center complex and 79% of the total amount of electricity needed for the other complex. Each system will be grid-tied, and thus will not need on-site storage. According to the information supplied to us by WestWind Solar, Inc., these two systems have the potential to reduce the amount of CO² released into the atmosphere by 399 tons over the life of the equipment.

In 2008 and 2009, the average monthly usage was approximately 2200 kWh for these two complexes (total). Based on information from SSVEC prepared specifically for the Ranch, the potential savings at 2008/2009 rates would equal \$191.40 per month at the Center complex and \$116.48 per month at the lab complex if PV systems had been in place. Since last summer, when those figures were presented to us, SSVEC has requested (and been granted) one rate increase and indicated another request would be presented to ACC within the next two years. Creden Huber, SSVEC CEO, announced during the SSVEC annual meeting this fall that members should anticipate increases in the cost of electricity of at least 40% and perhaps up to 400% in the near future.

Using very conservative figures, installation of the two renewable energy systems described in this proposal will reduce annual expenditures for electricity at least \$3000 per year. These savings will allow us to expand our energy efficiency efforts in the first two years after installation of the proposed systems by adding additional insulation to housing structures and replacing appliances with more efficient models, thus establishing a feed-back loop that will generate additional savings. This combination of savings will allow us to increase our operational capacity by rehabilitating a structure not included in this proposal.

If, as suggested by CEO Huber, electrical rates increase dramatically – the boost to our operating budget provided by these PV systems will become even more significant over both near-term and long-term.

4.1.2. Overview of the applicant organization and its primary mission and function.

The Appleton-Whittell Research Ranch (Research Ranch) is an 8000 acre sanctuary within the framework of the larger National Audubon Society system. The National Audubon Society began in New York in 1905, and is a 501 (c) 3 non profit organization (determination letter included, below). Audubon Arizona, established in 2002, is Audubon's state office and has direct supervisory responsibility for the Research Ranch. In the 1950s, the Research Ranch was a cattle ranch known as the Elgin Hereford Ranch, owned and operated by Frank and Ariel Appleton. In 1968 livestock were removed from the Ranch, and the Research Ranch became a sanctuary and field station dedicated to ecological research. In 1980 Audubon accepted management of the facility, which then became known as the Appleton-Whittell Research Ranch of the National Audubon Society. To date, Audubon holds title to approximately 1500 acres, including all buildings. Other land-owning partners include the Bureau of Land Management, U.S. Forest Service, Swift Current Land and Cattle Company, The Nature Conservancy, and The Research Ranch Foundation. Audubon has contractual or cooperative agreements with each entity, outlining management roles and responsibilities. The operating budget of the Research Ranch is dependent upon direct contributions to the Research Ranch, grants written by Research Ranch staff for the benefit of the Ranch, and on distributions from an endowment established solely for the purpose of assisting the Research Ranch.

The mission of the Research Ranch is to be a living laboratory to determine and demonstrate methods to safeguard and rehabilitate southwestern grasslands, and to assist policy makers and other citizens in the care and protection of our native ecosystems, natural resources, and quality of life. Three overarching and integrated goals guide actions on the Research Ranch:

Renewable energy systems at Audubon Administrative and Research Complexes - Awarded

- Be a premier semi-arid grassland that fosters a natural diversity of native species by practicing science based conservation and land stewardship,
- Understand how grasslands and related ecosystems function, and recognize the key elements that safeguard these ecosystems by fostering relevant research,
- Encourage citizens and policy makers to safeguard and rehabilitate native ecosystems via an active education and outreach program.

Sound conservation/land stewardship is the most important of the Research Ranch goals, and drives the research and education aspects of our program. Land stewardship activities include excluding domestic livestock by construction and maintenance of 17 miles of perimeter fence to wildlife friendly standards. The native biodiversity of the grassland ecosystems is protected by removal of non-native, invasive species. To augment rare naturally occurring waters, we maintain water for wildlife at nine sites by windmills, solar panels, and rainwater harvesting.

Research and monitoring efforts that help us understand and protect grassland ecosystems are promoted and facilitated. Several hundred scientific papers have been published in refereed journals, and many books include results of studies performed here. Currently there are sixty-seven active projects being conducted by academic faculty and students, federal and state agency personnel, private individuals, and Audubon staff. For more information, please see the research portion of our website

<http://www.audubonresearchranch.org/Research>.

As part of our education and outreach program, we host workshops, seminars and presentations for residents and professionals on a broad range of topics promoting understanding, appreciation and protection of our environment. Recent events include:

Renewable energy systems at Audubon Administrative and Research Complexes - Awarded Sustainable Activities in Santa Cruz County; Climate Change and the Impact on Grasslands; and Rainwater Based Habitat and Landscaping. University students benefit from field trips to the Research Ranch, and it is a favorite destination of conservation groups. A web-based educational program, "Living Gently on the Land," includes tips for residents to lessen their impacts on ecosystems of SE Arizona and our recently implemented TogetherGreen project will assist rural communities to reduce carbon emissions.

As a conservation organization, it is imperative that the Research Ranch be proactive in efforts to conserve natural resources. Three years ago an intern prepared a "Conservation Plan for Buildings" to augment our existing efforts. We've been working our way through the list of improvements he suggested. The following is a quick list (by no means complete, and not in any particular order) of steps we've taken to reduce our use of electricity generated from coal:

- Last year we replaced substandard windows and doors in all housing units, plus reduced the size or completely eliminated some windows/doors.
- Only one residential unit has central air conditioning, and that unit is used sparingly.
- The Grassland Center, built in 2000, has a heat pump/AC, but the system is seldom used as the heavily insulated building is very thermally efficient plus the south-facing thermal mass wall does an excellent job of warming the building through the cold months.
- The Center has clerestory windows to help in air flow during the warm months and uses outside air to cool all buildings passively by opening windows.
- The Casita and Laboratory are heated primarily via thermal mass walls.
- The Grassland Center and three housing units have one or more ceiling fans.
- We control "phantom" use of electricity through the use of power strips where possible.
- We turn off water heaters when not in use and do not use hot water in washers except as

Attachment G



WILDCAT SILVER

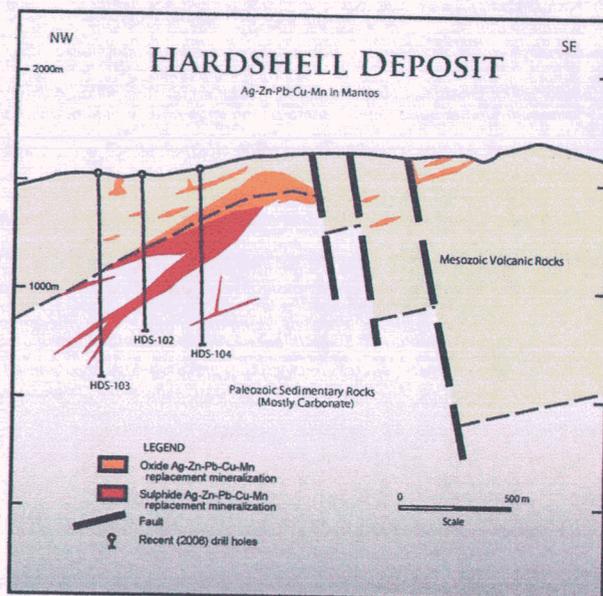
TSX-V: **WS**

WILDCAT SILVER IS DEVELOPING THE HARDSHELL SILVER-MANGANESE DEPOSIT IN SANTA CRUZ COUNTY, ARIZONA. WILDCAT OWNS 80% OF THE HARDSHELL DEPOSIT AND IS HEADQUARTERED IN VANCOUVER, BC. THE COMPANY TRADES ON THE TSX VENTURE EXCHANGE UNDER THE SYMBOL WS.

ABOUT HARDSHELL

Hardshell is a polymetallic mineral exploration project located 80 kilometres southeast of Tucson, Arizona. The project is estimated to contain an indicated resource of 36.2 million ounces of silver and 900 million pounds of manganese, plus an inferred resource of 84.9 million ounces of silver and 7.5 billion pounds of manganese, along with significant amounts of copper, lead and zinc. Wildcat is currently working on a preliminary economic assessment for the Hardshell project expected for completion in mid-2010.

In November 2008 Wildcat announced the results of some ongoing metallurgical test work being done by Hazen Research Inc. The work identified improvements to initial design concepts that are expected to reduce capital and operating costs by removing acid from the grinding step. Test work is ongoing and firm estimates will be provided on completion of the study. Preliminary results using the magnetic properties of Hardshell's ore indicate further potential capital and operating cost reductions.



INDICATED MINERAL RESOURCES

	TONNES (000S)	AG (G/T)	MN (%)	CU (%)	ZN (%)	PB (%)	AG (M OZ)	MN (TONNES)	CU (TONNES)	ZN (TONNES)	PB (TONNES)
OXIDE	6,004	187.8	6.83	0.10	1.03	1.06	36.2	410,000	6,000	62,000	64,000

INFERRED MINERAL RESOURCES

	TONNES (000S)	AG (G/T)	MN (%)	CU (%)	ZN (%)	PB (%)	AG (M OZ)	MN (TONNES)	CU (TONNES)	ZN (TONNES)	PB (TONNES)
OXIDE	39,268	61.0	7.66	0.06	1.55	1.13	77.0	3,009,000	22,800	609,000	445,000
SULPHIDE	6,999	35.0	5.77	0.10	2.25	2.04	7.9	404,000	7,000	157,000	143,000

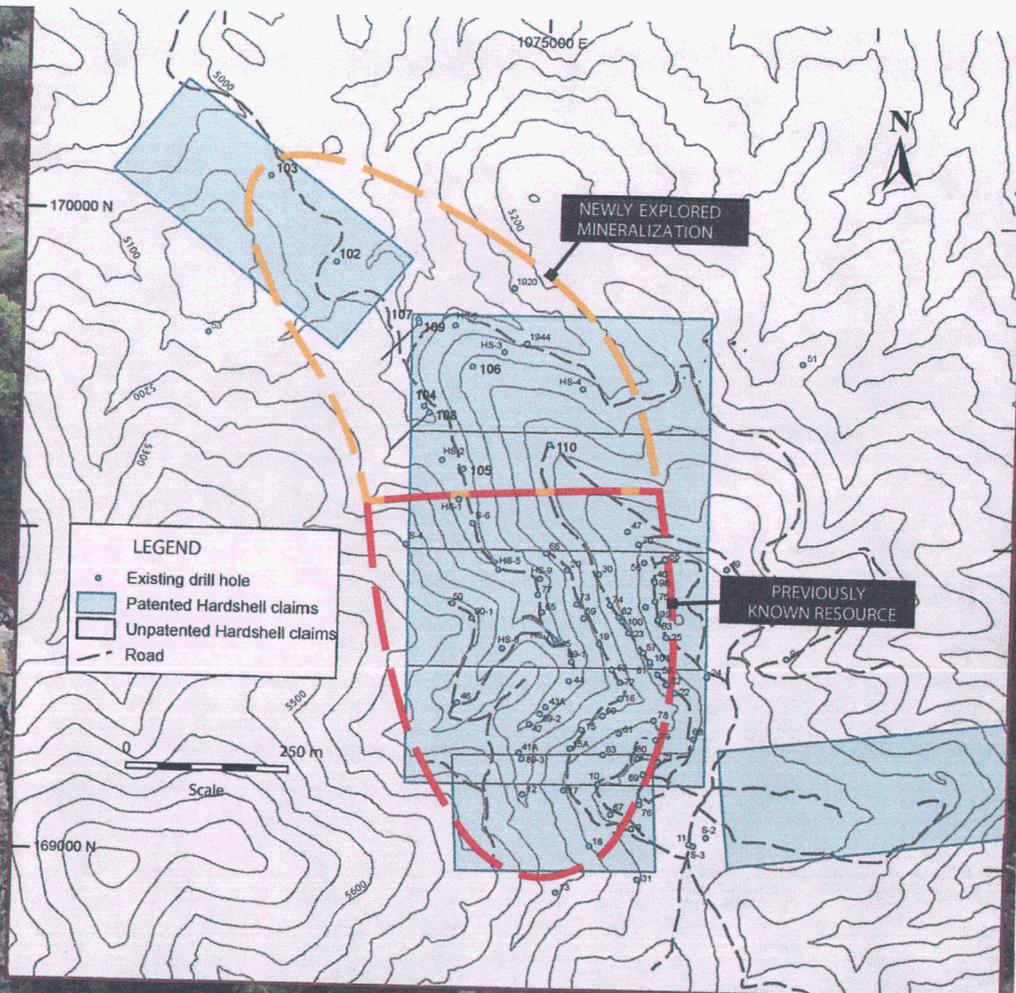
HOLE	INTERVAL (m)	SILVER (g/t)	MANGANESE (%)
102	19.8	68.5	6.7
104	109.7	75.3	11.8
105	46.0	105.3	15.8
106	16.6	80.6	15.6
108	16.8	48.8	12.3
109	108.2	68.4	13.7
110	22.9	175.6	12.9
and	22.9	180.2	10.2

DRILLING

Exploration on the Hardshell deposit dates back to 1879 when the property was initially discovered. Between the mid-1960s and mid-1980s more than 100 holes were drilled by previous owners. On acquisition of the property in 2006 Wildcat re-assayed all available core remaining from previous drilling, and confirmed historic findings for silver, manganese, copper, lead and zinc. Since that time Wildcat has drilled 13 new holes that confirmed the continuity of the mineralization. Select grades are listed in the box on the left.

SHARE STRUCTURE (APRIL 15, 2010)

Issued and outstanding	93.5 million
Warrants	10.2 million
Options	5.8 million
Fully diluted	109.5 million
Recent share price	C\$0.50
52-week high/low	C\$0.78 / \$0.23
Market cap	~C\$45.0 million



WILDCAT SILVER TRADES ON THE TSX VENTURE EXCHANGE UNDER THE SYMBOL WS

“ The Hardshell deposit is emerging as one of the most important silver and manganese development projects in the US. Our next step will be to update the 2007 Preliminary Economic Assessment. This work is currently under way and is expected to be complete by mid-year.”

- CHRIS JONES
PRESIDENT & CEO

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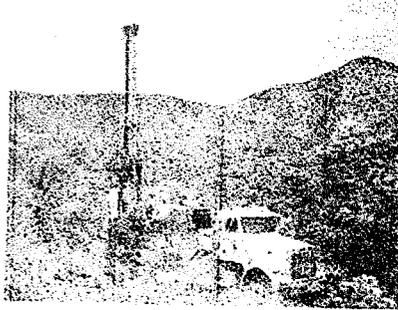


Plan for Mine in Harshaw Outlined at Meeting

PRT Staff

On March 16, a few local residents, including Jeff Evans, Deborah Fain, Adrienne Halper, Keith Barth, Judith Samsell, Andy Wood, and Bob Mistorowski, were invited to attend an informal meeting at The Gathering Grounds with Chris Jones, CEO/President of Wildcat Silver Corp., and James Sturges, Vice President of Sustainable Development for Rosemont Copper Mine.

According to Jeff Evans, Jones and Sturges opened the meeting



Drilling rig in Harshaw as shown in Wildcat's website overview of the Hardshell Project

by providing an overview of Wildcat Silver's plan to establish a mine in Harshaw.

The two men described the meeting as exploratory, saying they wanted feedback from area residents about their planned project. They said that Wildcat Silver needs to do further testing in order to decide whether or not to proceed, but that they hope to begin mining in Harshaw in three years. They estimated

that mining that site would take about 18 years to complete, and would generate a profit of three to four hundred million dollars.

Residents who attended the meeting were told that mining operations would focus on extraction of several minerals, and that the method of extraction—open pit or underground—would be based on whichever was cheapest. (cont. on page 3)

Although the site is on private land that has been purchased by Wildcat Corp., it is located within the Coronado National Forest, and the men noted that many permits will therefore be required.

The Wildcat representatives told their audience that the trucks that would transport all materials to and from the mine would pass directly through Patagonia, traveling Highway 82 to Harshaw Road to the mine and back. When a member of the audience noted that the noise and vibration from the trucks, the traffic through town, and the wear and tear on road surfaces would be a problem, the men answered 'We're working on that'. They stated that the mine expected to employ around 300 workers, thus providing local jobs, and added that small towns were generally pleased with the improvements that occur when a mining venture is begun in their area. 'We'll put in a couple of convenience stores, maybe a fast-food restaurant, and a stoplight'.

The company's website, www.wildcatsilver.com refers

to the Harshaw site as "The Hardshell Project." Its overview describes successful excavations from this site carried out between 1896 and 1964, and mentions "geological mapping and intermittent drill programs from 1964 until about 1980." The overview states that Hardshell is estimated to contain up to 42.7 million ounces of silver and 1.3 billion pounds of manganese, plus an inferred resource of 37.7 million ounces of silver and 2.5 billion pounds of manganese."

Wildcat Silver Corporation's website notes exploratory drilling done as recently as 2009 at The Hardshell Project, located about 80 kilometres southeast of Tucson, Arizona, and about 13 kilometres north of the U.S. border with Mexico. However, in response to a recent inquiry from Annie McGreevy, Mineral Resource Geologist Karl Sandwell-Weiss at the U.S. Forestry Service in Tucson stated that "as of 2/2/10, we have no requests for mineral operations at Humboldt Canyon or by Wildcat Silver Corp. at their Hardshell Project." PRT will continue to report on this story's development in future articles.

OPEN MEETING AGENDA ITEM

ORIGINAL

Steve Getzwiller
PO Box 816
Sonoita, AZ 85637

RECEIVED

2010 JUN 29 A 9 17

June 28, 2010

AZ CORP COMMISSION
DOCKET CONTROL

Arizona Corporation Commission
Chairmen Kristin Mayes
Commissioner Pierce, Newman, Kennedy, and Stump

Docket : E-01675A-08-0328 E-01575A-09-0453

Dear Chairman Mayes and Commissioners:

I am writing this letter in response to the SSVEC mass mailing sent out June 22, 2010, (I believe it was sent to all members, except me, because I am excluded from all mailings).

This letter stated that SSVEC is not planning to service the Wildcat Silver Mine in the Patagonia Mountains.

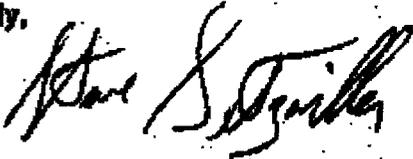
The CEO of Wildcat Silver Mining Company made 3 presentation in Patagonia, 2 of which I attended. The 3rd was to our Mountain Empire Rotary Club.

He was asked during each meeting how much power the mine would require and who would provide it. At this meeting he answered that he did not know.

In response to a direct question as to whether or not he had been approached by SSVEC, which is contrary to SSVEC letter June, 22, 2010, he stated that he in fact had received correspondence from Sulphur that was on his desk, but he had not had an opportunity to review it.

He assured me that he would come back to Rotary in July, to answer these questions, when he would have more information.

Sincerely,



Steve Getzwiller

Attached : SSVEC Letter June 22, 2010

Arizona Corporation Commission
DOCKETED

JUN 29 2010

DOCKETED BY 