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October 12, 2010

Arizona Corporation Commission
DOCKETED
OCT 12 2010
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Docket Control
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

RE: Lawrence Berkeley National Laboratory Presentation Regarding Decoupling
Docket Nos. E-00000J-08-0314 and G-00000C-08-0314

Attached please find an updated copy of the Lawrence Berkeley National Laboratory ("LBNL") Presentation from the Securities Open Meeting held at the Arizona Corporation Commission on June 10, 2010. Arizona Public Service Company is filing this Presentation on behalf of LBNL, and therefore does not attest to the accuracy of the information contained therein.

Sincerely,

Leland K Snook for Susan Casady

Susan Casady

SC/sl

CC: Parties of record

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DOCKET CONTROL

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Analysis of the Energy Efficiency Standard (EES) and Decoupling on Arizona Public Service and Tucson Electric Power

Prepared for the Arizona Corporation Commission

Peter Cappers, Chuck Goldman, Andrew Satchwell
Lawrence Berkeley National Laboratory

ACC Open Meeting (UPDATE)
June 14, 2010

Presentation Overview

- **Background**
- Analysis Approach
- APS Utility & DSM Characterization
- APS Analysis Results
- TEP Utility & DSM Characterization
- TEP Analysis Results
- Conclusions

Disclaimer

- The LBNL Benefits Calculator is used to model the incremental effects of implementing more aggressive EE/DR programs on various stakeholders (ratepayers and utility shareholders) as represented by various financial metrics
- Although APS and TEP provided many (but not all) of the input assumptions for this study, the information presented herein are provided solely for purposes of the LBNL study used to evaluate the potential financial effects of DSM programs and the resulting implications of decoupling, and are not to be used or relied upon for purposes of trading any security

Approach and Objectives

- Arizona policymakers and stakeholders are interested in expanding ratepayer-funded EE programs and assessing the impacts from achieving more aggressive savings goals
- LBNL analysis:
  - Documents benefits, costs, and financial impacts on stakeholders (i.e., ratepayers and utility shareholders) if EES savings goals are achieved
  - Analyzes the potential impacts of a decoupling mechanism on utility shareholders and ratepayers if implemented in conjunction with EES savings goals
  - Takes a much longer-term perspective (20 years) than most analyses of this type

Presentation Overview

- Background
- **Analysis Approach**
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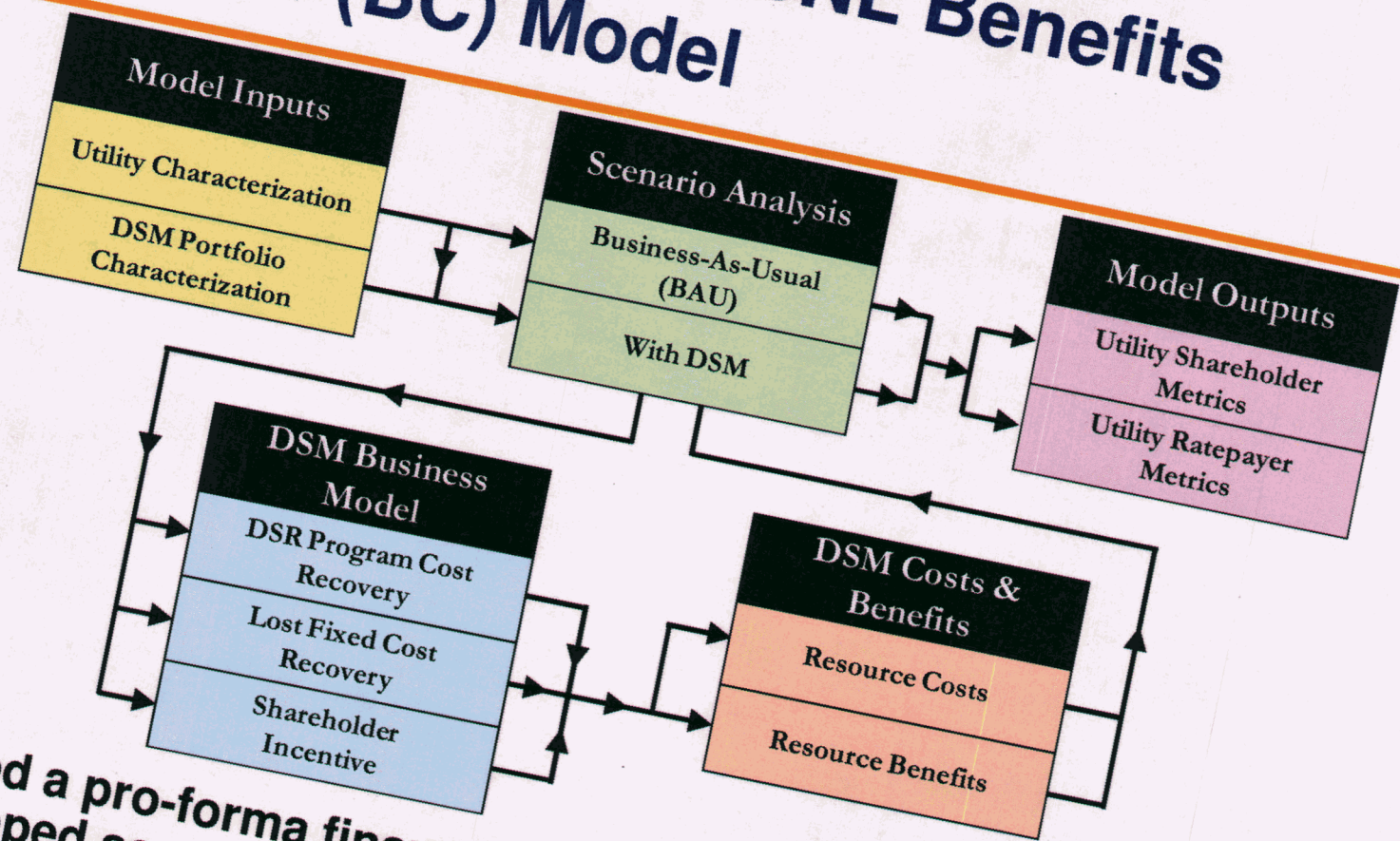
Analysis Approach: LBNL Benefits Calculator (BC) Model



- Utilized a pro-forma financial spreadsheet model originally developed as part of the National Action Plan for Energy Efficiency; BC Model has been significantly enhanced by LBNL over the past 3 years

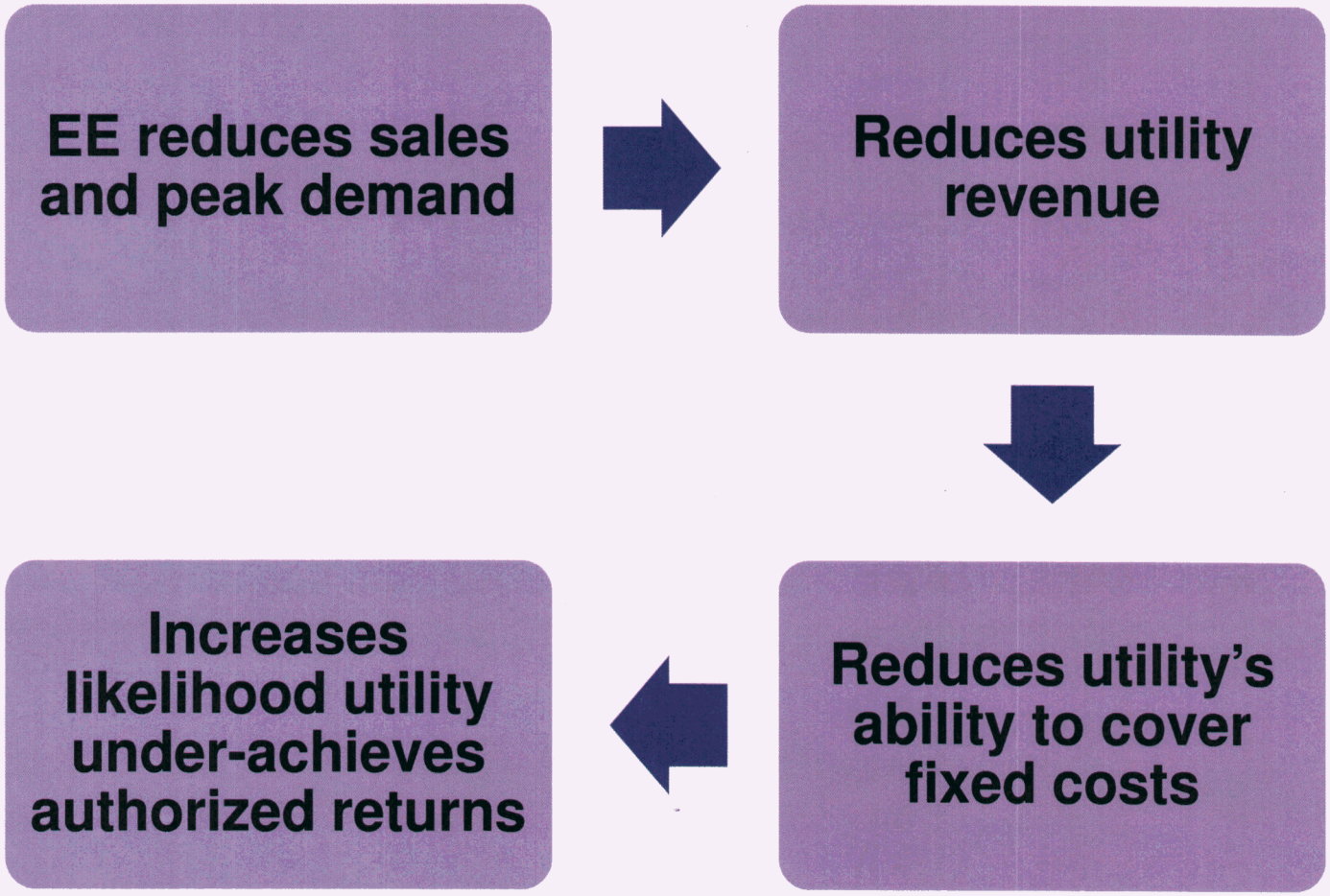
Utility Characterization

- **Each utility is characterized annually over a 20-year time horizon (2011-2030)**
  - Model determines simplified annual utility cost of service based on a set of starting financial assumptions provided by APS & TEP
  - Model determines simplified annual, utility-wide retail rates based on revenue requirements set during last model-determined general rate case filing
  - Model determines annual collected revenue from ratepayers and uses this to derive achieved after-tax earnings and ROE for the utility

DSM Characterization

- **Each utility is analyzed with two different DSM Portfolios**
  - **Business as Usual with EE (BAU w/EE)**
    - APS & TEP offers EE programs as if the Energy Efficiency Standard (EES) was not enacted and continues along its "pre-existing" EE savings path
  - **Energy Efficiency Standard (EES)**
    - APS & TEP offers EE and DR programs that comply with the EES savings requirements, inclusive of the credits provided for pre-2011 measures (starting in 2016) and effects of improvements to building codes
- **LBNL assumes that DSM programs are offered only between 2011 and 2020**
  - **In reality, AZ utilities are expected to continue offering DSM programs beyond 2020**
  - **Analysis extends through 2030 to capture majority of benefits from EE measures installed during 2011-2020 period**

Shareholder Concerns about the Aggressive Pursuit of EE



Analysis Road Map

- Quantify the benefits to ratepayers associated with APS & TEP achieving the EES targets over a 20-year time horizon (2011-2030)
- DSM business models include program expensing and shareholder incentives, but not a decoupling mechanism (at first)
  - Illustrate impact of achieving EES goals on utility shareholders – want to assess effects on APS & TEP earnings and ROE
  - Then apply decoupling mechanism and analyze impacts on shareholders and ratepayers

Presentation Overview

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- **APS Utility & DSM Characterization**
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APS: BAU w/ EE Case

Key Utility Characteristics

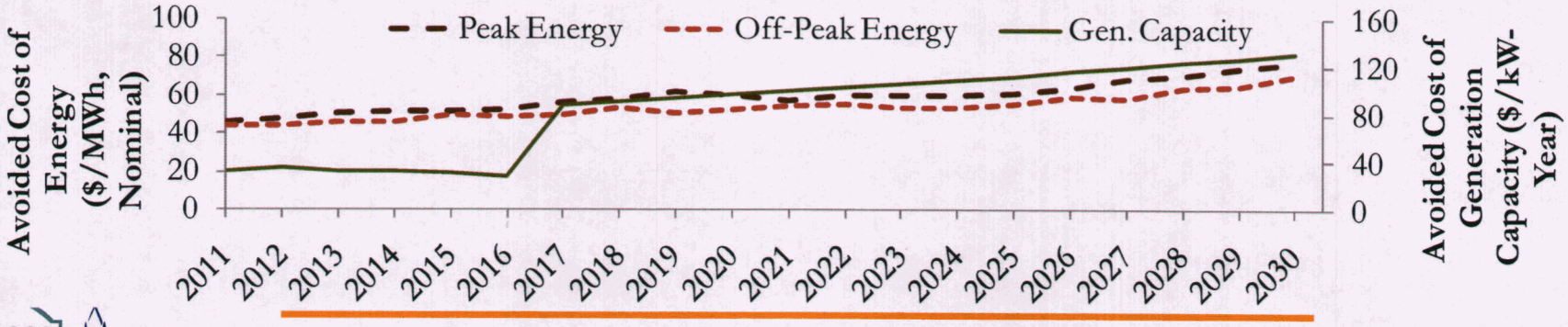
- Business-as-usual (BAU) case assumes utilities continue along "pre-existing" EE savings path
- Fuel and purchased power costs are perfectly passed through to customers annually via fuel-adjustment clause (FAC)
- Non-fuel expenses, inclusive of return on and of capital expenditures and O&M expenses associated with new generation resources, are expected to grow in excess of 5% annually
- General rate case is filed every 3 years or whenever annual CapEx budgets exceed $1B; uses historic test year and takes 2 years for new rates to go into effect from time of filing

APS: BAU w/ EE Case

DSM Portfolio Savings and TRC Benefits

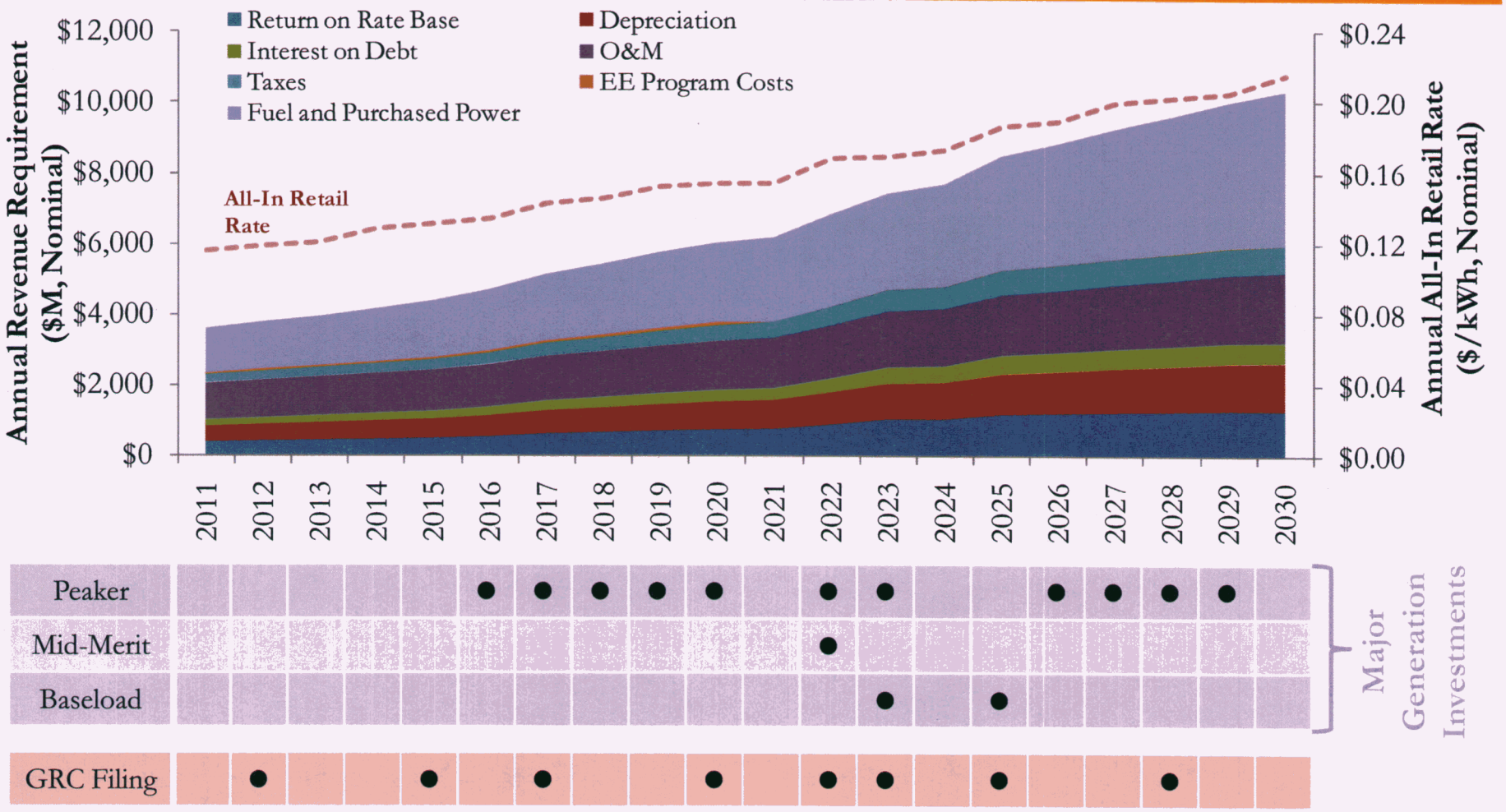
	Portfolio Lifetime Savings				Total Resource ($M, PV)		
Case	Peak Energy (GWH)	Off-Peak Energy (GWh)	Total Energy (GWh)	Peak Demand (MW)	Benefits	Costs	Net Benefits
BAU w/ EE	30,507	13,074	43,581	602	1,675	729	946

- **LBNL assumptions regarding EE program savings:**
  - **1.25% savings in 2011 and 1.50% in 2012 (consistent with outcomes from latest APS rate case settlement); 1.0% savings/year thereafter (2013-2020)**
- **EE programs are highly cost effective; net resource benefits of ~$946M during 2011-2030**



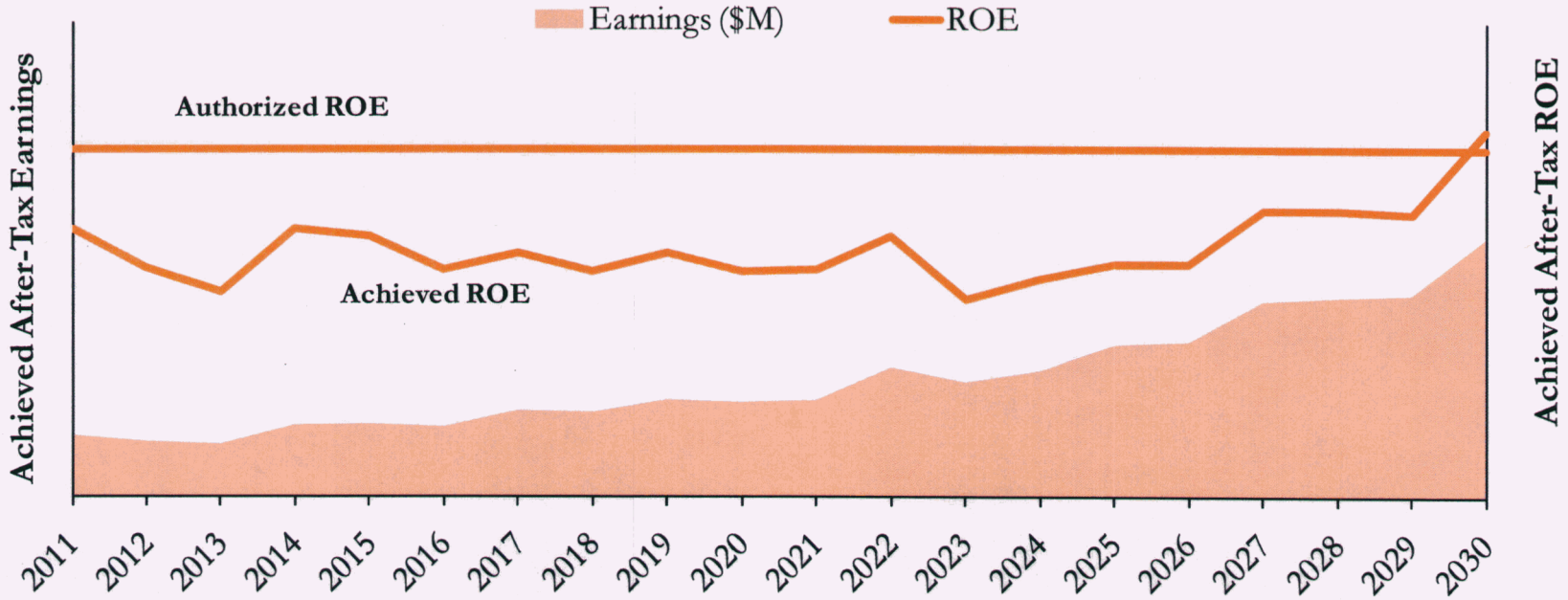
APS: BAU w/ EE Case

Annual Revenue Requirement and Retail Rates



APS: BAU w/ EE Case

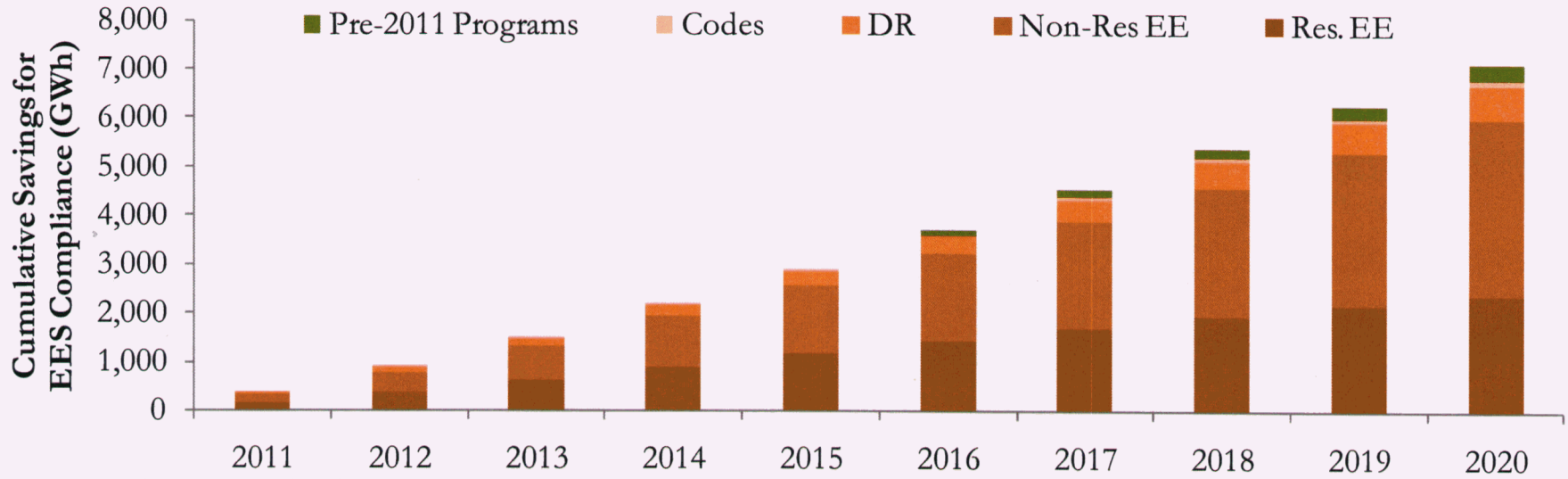
Annual Achieved Earnings and ROE



- **APS is expected to under-earn relative to authorized level in 19 years**
  - **These results are driven primarily by the 3-year lag between test year data in GRC filings and effective date of new rates, and high growth rates in non-fuel costs**
- **In early years, non-fuel costs are growing faster than revenues; in the last several years, the reverse is true**

APS: EES Case

Key DSM Portfolio Characteristics

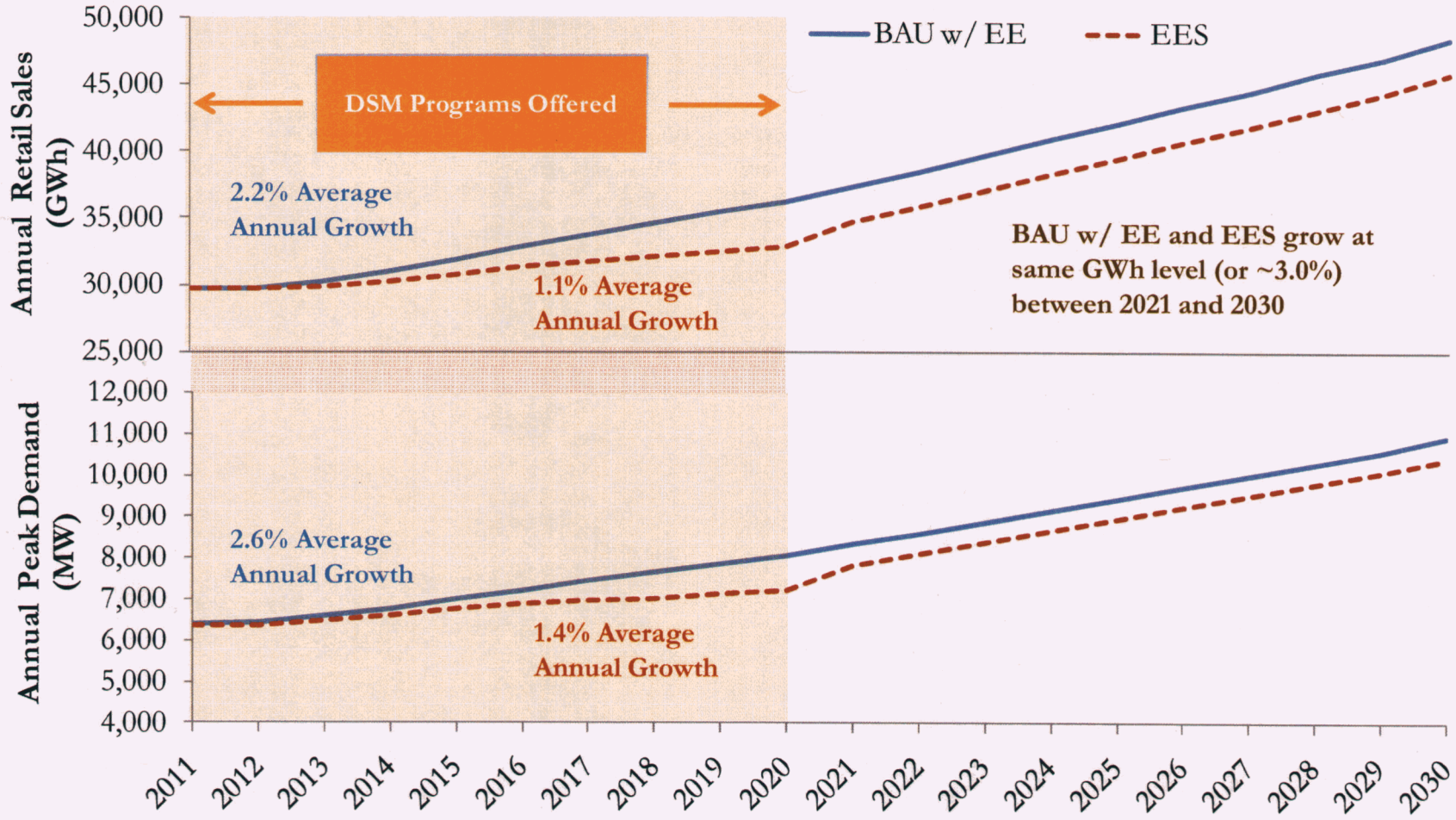


EES *(% of Prior Years Sales)*	**1.25%**	**3.00%**	**5.00%**	**7.25%**	**9.50%**	**12.00%**	**14.50%**	**17.00%**	**19.50%**	**22.00%**

- **Cumulative annual achieved savings exceed 6,800 GWh in 2020**
- **Incremental annual savings exceed 2% starting in 2013**

APS: BAU w/ EE Case vs. EES Case

Impacts on Retail Sales and Peak Demand



APS: BAU w/ EE Case vs. EES Case

DSM Portfolio Savings and TRC Benefits

	Portfolio Lifetime Savings				Total Resource ($M, PV)		
Case	Peak Energy (GWH)	Off-Peak Energy (GWh)	Total Energy (GWh)	Peak Demand (MW)	Benefits	Costs	Net Benefits
BAU w/ EE	30,507	13,074	43,581	602	1,675	729	946
EES	**75,664**	**19,338**	**95,002**	**1,520**	**3,616**	**2,208**	**1,408**

- **If APS achieves the EES portfolio goals compared to the BAU with EE case:**
  - **Produces more than twice the total energy savings;**
  - **~150% increase in peak demand savings; and**
  - **~50% improvement in net resource benefits (~$1.4B)**

APS: BAU w/ EE Case and EES Case

Initial DSM Business Model

- **DSM Program Cost Recovery**
  - DSM program budgets are expensed to ratepayers and perfectly recovered in the year the costs are incurred
- **Shareholder Incentive Mechanism**
  - Apply cap of 14% of program costs on an pre-tax basis, assuming all other savings goals to receive this amount are achieved
- **Lost Fixed Cost Recovery Mechanism**
  - None (at this time)

Presentation Overview

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- **APS Analysis Results**
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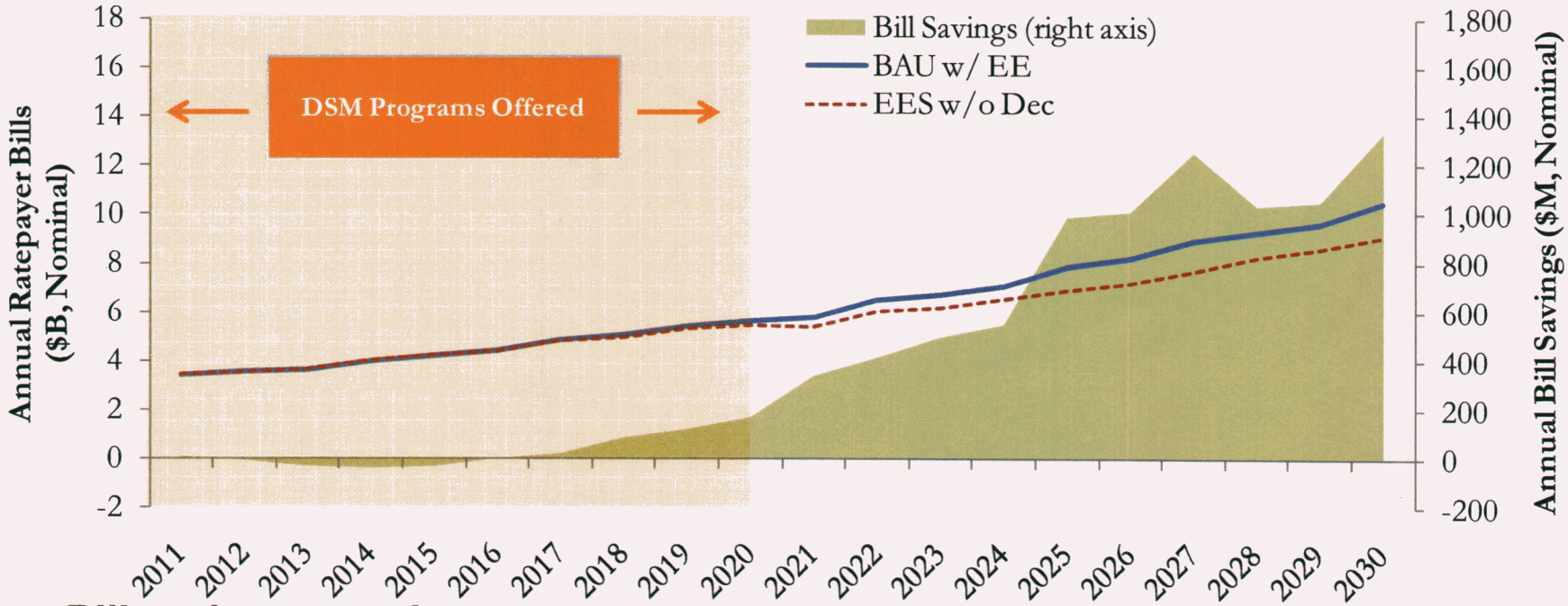
- Conclusions

APS: BAU w/ EE Case vs. EES Case

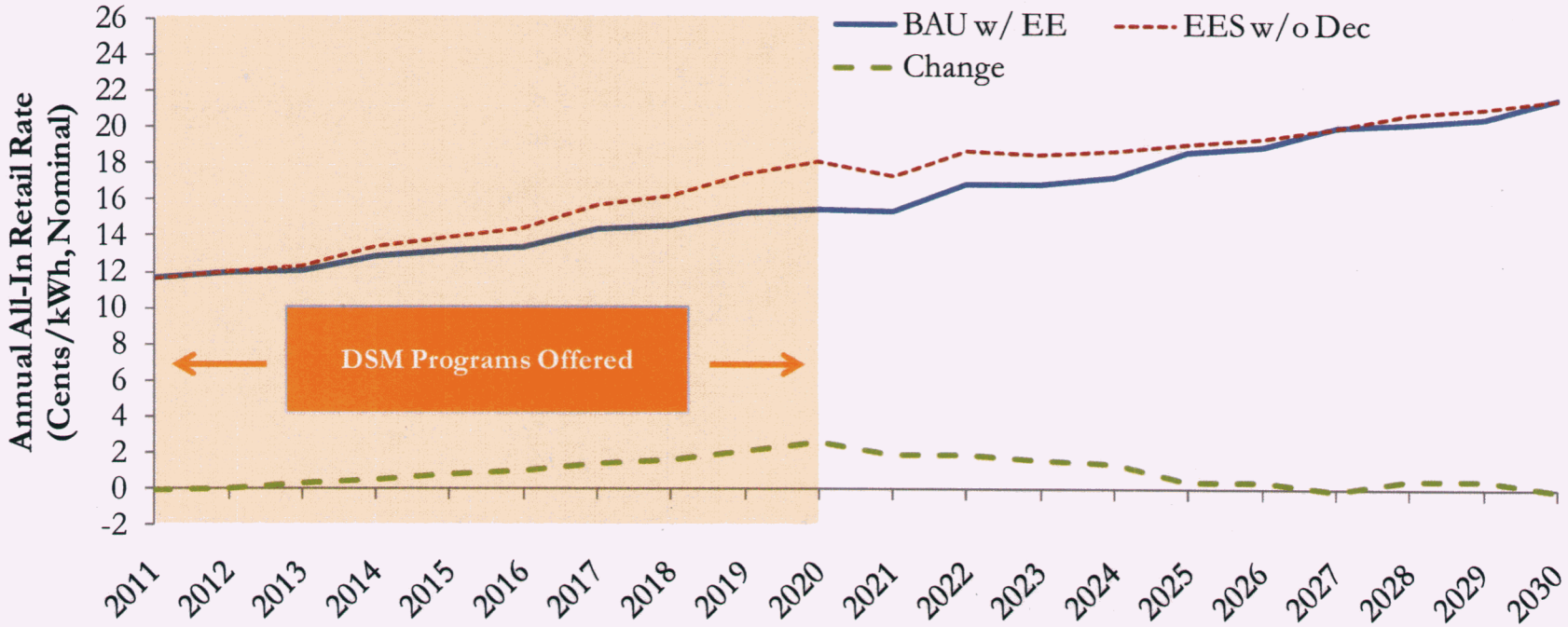
Impact on Ratepayer Bills



- **Bill savings net of program costs accumulate over time (shown in green)**
- **Bill savings ramp up after 2016 as new generation plants begin to be deferred and even more so after 2020 as more plants are deferred and no DSM budgets exist; LBNL assumes baseload plants can be deferred**
- **Customers realize additional bill savings of ~$4.6B (PV @ 4.0%) between 2011 and 2030 from EES on top of savings from EE in BAU**

APS: BAU w/ EE Case vs. EES Case

Impact on All-In Average Retail Rates



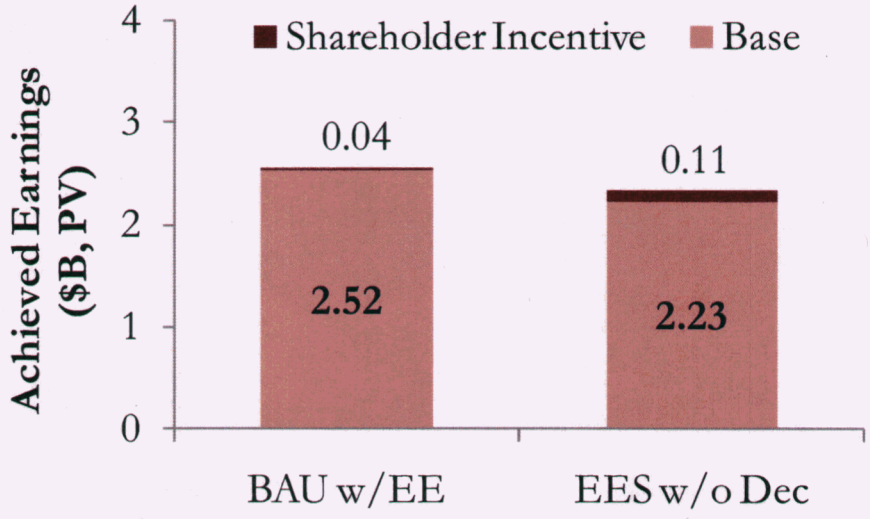
- **In the EES case, APS' annual all-in retail rates are ~1.0¢/kWh higher, on average, than in the BAU w/ EE case, but are reasonably comparable between 2025 and 2030**
- **This observed increase in rates is driven primarily by sales reductions from EES**

Shareholder Perspective of EES Financial Impacts

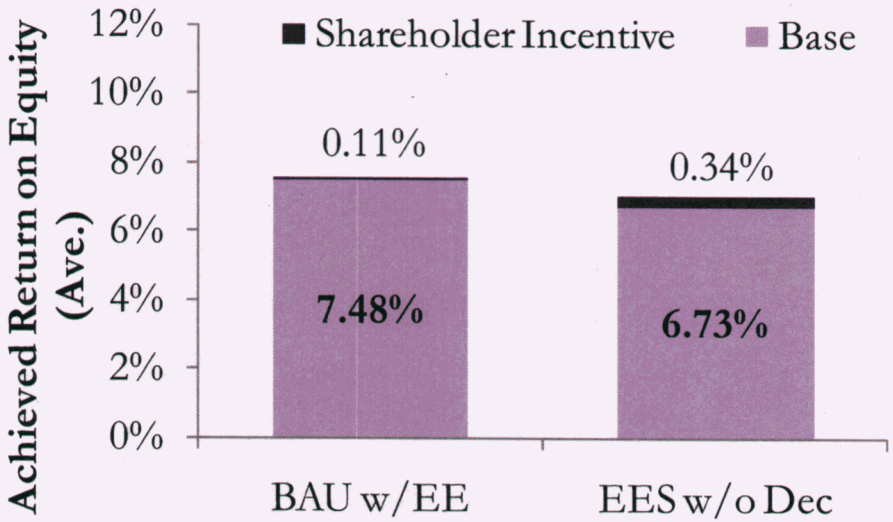
- Incremental reductions in sales and peak demand from EE and DR programs offered by APS between 2011 and 2020 will have largest effect on utility ROE and earnings during this same time period
- LBNL analyzed the impacts on utility earnings and ROE, and hence the value of a decoupling mechanism, during time period that EE and DR programs are implemented to achieve EES goals (2011-2020)
  - For modeling purposes, LBNL assumed that DSM programs were not offered after 2020, thus we did not analyze financial impacts on utility for the 2020-2030 time period

APS: BAU w/ EE Case vs. EES Case

Financial Impact on Shareholders w/o Decoupling



	BAU w/EE	EES w/o Dec
Total	$2.56	$2.34



	BAU w/EE	EES w/o Dec
Total	7.59%	7.07%

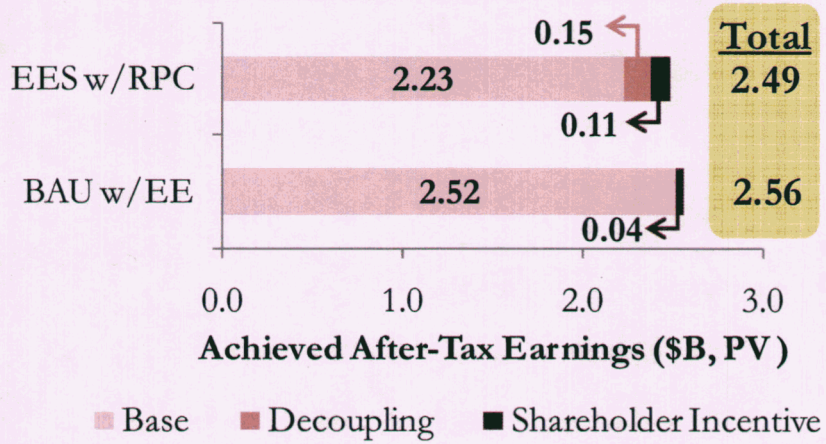
- **APS earnings are reduced by~$220M (PV) and average ROE by 52 basis points (0.52 percentage points) while EE programs are implemented to meet EES goals (2011-2020)**

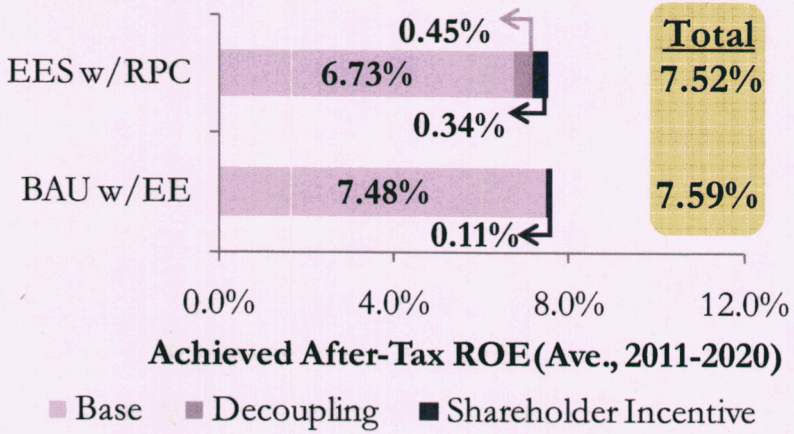
Decoupling: Revenue per Customer Mechanism

- **Revenue-per-Customer decoupling (EES w/ RPC)**
  - **At time of rate case, utility revenue requirement is set and allocated to each customer**
    - Model does not differentiate between new vs. existing customers, residential vs. commercial vs. industrial customers
    - Model lumps all customers together and equally distributes the revenue requirement to each customer
  - **Utility is allowed to collect the RPC amount from all customers once new rates become effective**
    - RPC amount is held constant between rate cases
    - Utility's revenue requirement increases as new customers enter service territory

APS: BAU w/ EE Case vs. EES Case

Financial Impact on Shareholders w/ Decoupling





- **RPC decoupling contributes ~$150M (PV) to earnings and 45 basis points (0.45 percentage points) to APS' average ROE**
- **Application of RPC decoupling, shareholder incentive, and program cost expensing under the EES case provides achieved earnings and ROE levels that are almost comparable to the BAU EE case**

APS: BAU w/ EE Case vs. EES Case

Financial Impact on Ratepayers w/ Decoupling

- **Between 2011 and 2020, the RPC decoupling mechanism adds ~$320M (PV) or 0.9% to APS ratepayer bills**
- **The RPC decoupling mechanism increases average all-in retail rates by ~1.5 mills/kWh (or ~1.0%)**

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- **TEP Utility & DSM Characterization**
- TEP Analysis Results
- Conclusions

TEP: BAU w/ EE Case

Key Utility Characteristics

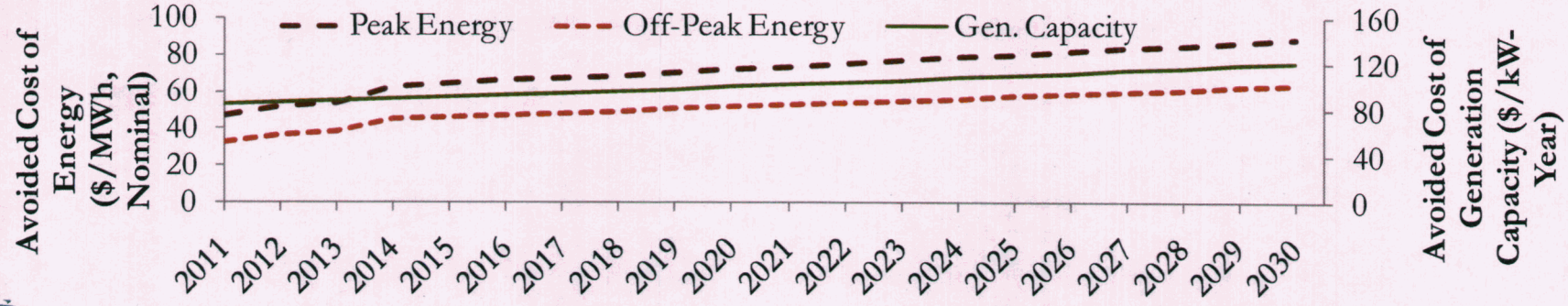
- Business-as-usual (BAU) case assumes TEP continues along "pre-existing" EE savings path
- Fuel and purchased power costs are perfectly passed through to customers annually via fuel-adjustment clause (FAC)
- Non-fuel expenses, inclusive of return on and of capital expenditures and O&M expenses associated with new generation resources, are expected to grow in excess of 4.2% annually
- General rate case is filed every 2 years or whenever annual CapEx budgets exceed $100M; uses historic test year and takes 2 years for new rates to go into effect from time of filing

TEP: BAU w/ EE Case

DSM Portfolio Savings and TRC Benefits

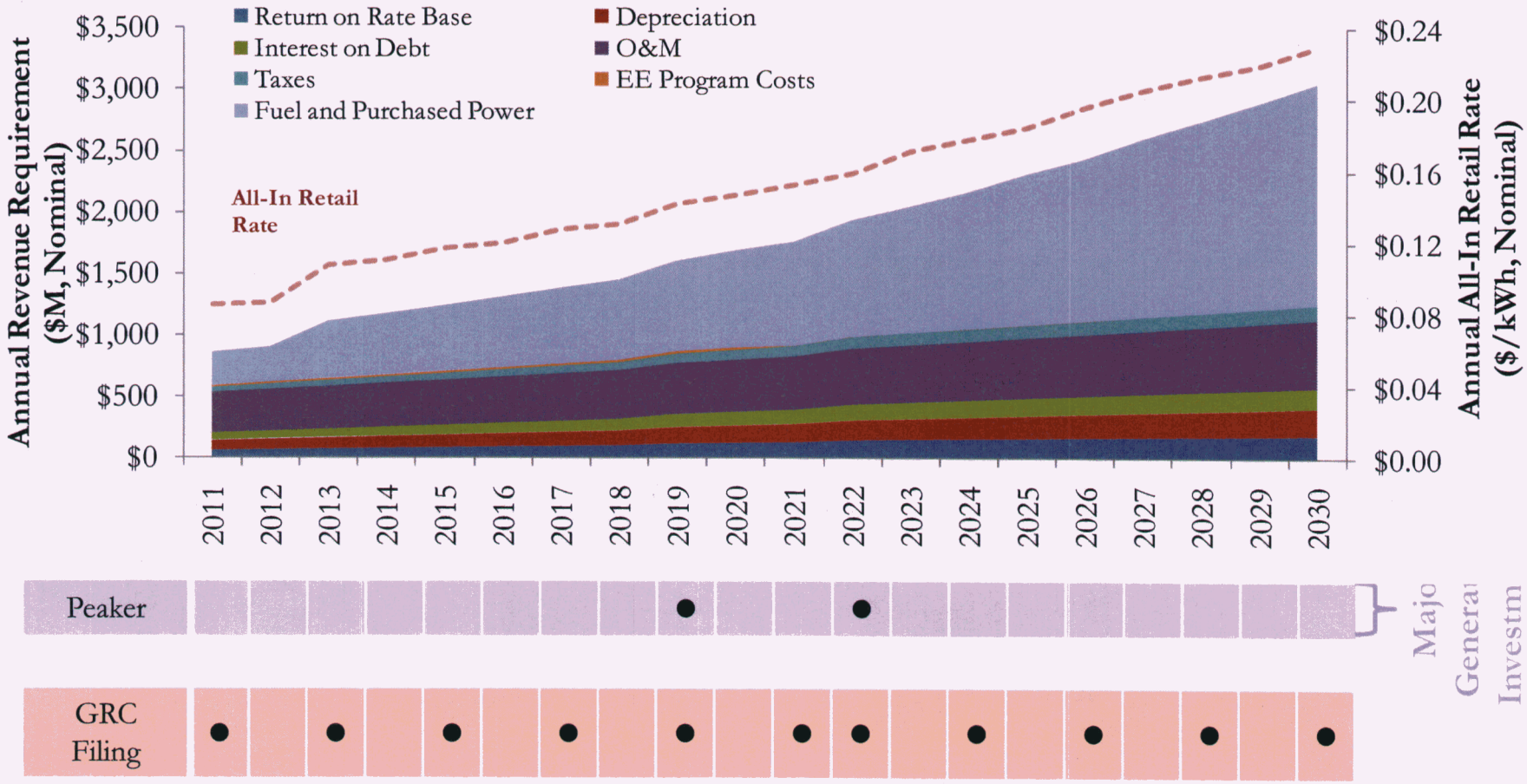
	Portfolio Lifetime Savings				Total Resource ($M, PV)		
Case	Peak Energy (GWH)	Off-Peak Energy (GWh)	Total Energy (GWh)	Peak Demand (MW)	Benefits	Costs	Net Benefits
BAU w/ EE	9,147	3,920	13,067	232	624	152	472

- **LBNL assumptions regarding TEP EE program savings:**
  - **Consistent with expected savings levels that would have been achieved absent the passage of the EES (1% savings/year)**
- **EE programs are highly cost effective with net resource benefits of ~$472M (PV)**



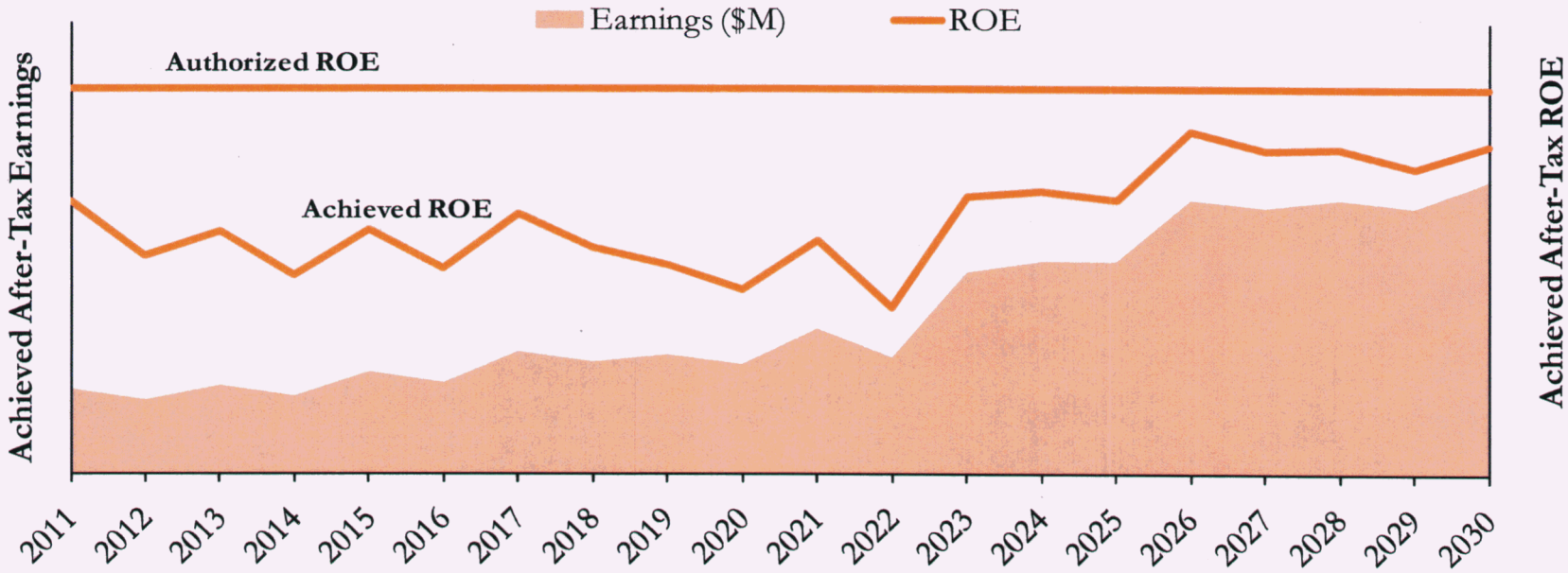
TEP: BAU w/ EE Case

Annual Revenue Requirement and Retail Rates



TEP: BAU w/ EE Case

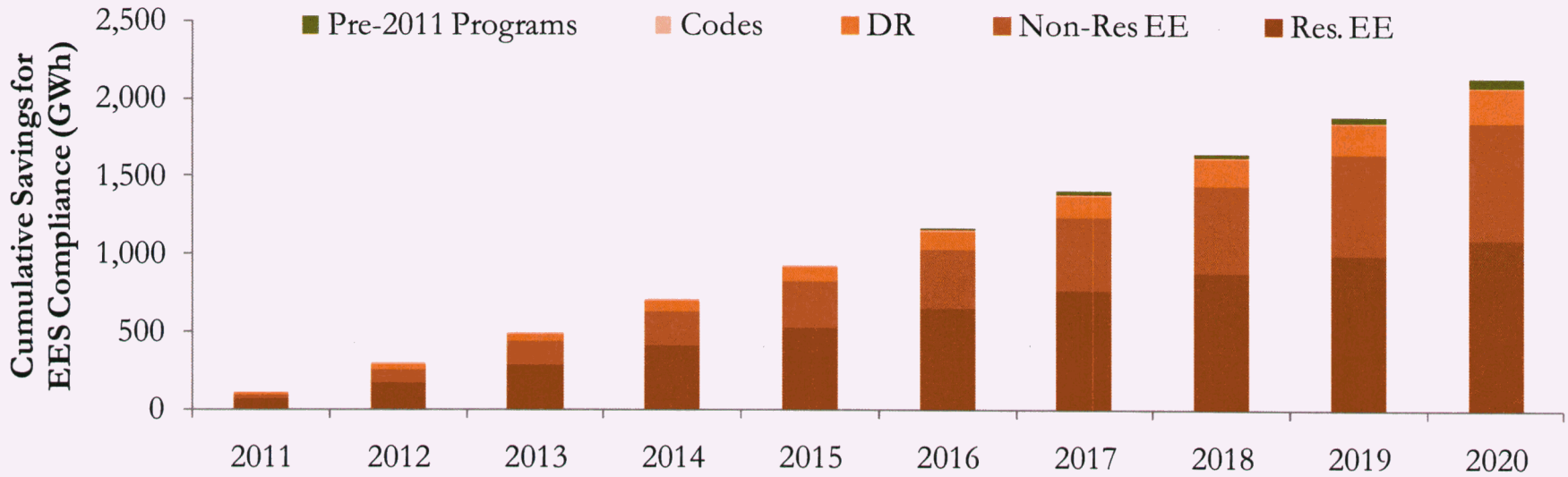
Annual Achieved Earnings and ROE



- **TEP is expected to under-earn relative to authorized level in all years**
  - **These results are driven primarily by the 3-year lag between test year data in GRC filings and effective date of new rates, and high growth rates in non-fuel costs**

TEP: EES Case

Key DSM Portfolio Characteristics

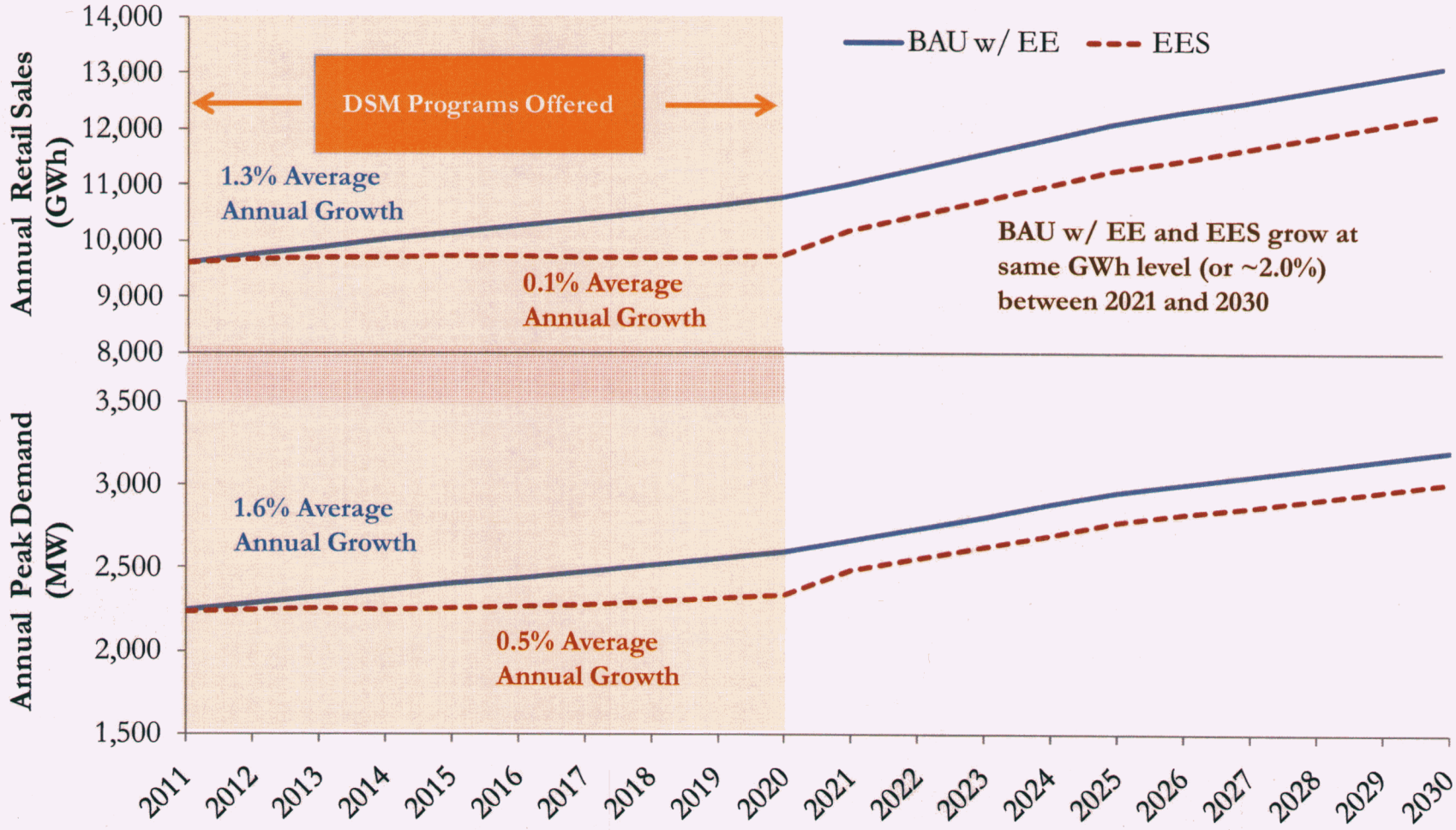


EES *(% of Prior Years Sales)*	**1.25%**	**3.00%**	**5.00%**	**7.25%**	**9.50%**	**12.00%**	**14.50%**	**17.00%**	**19.50%**	**22.00%**

- **Cumulative annual achieved savings exceed 2,000 GWh in 2020**
- **Incremental annual savings exceed 2% starting in 2013**

TEP: BAU w/ EE Case vs. EES Case

Impacts on Retail Sales and Peak Demand



TEP: BAU w/ EE Case vs. EES Case

DSM Portfolio Savings and TRC Benefits

Case	Portfolio Lifetime Savings				Total Resource ($M, PV @ 4.0%)		
	Peak Energy (GWH)	Off-Peak Energy (GWh)	Total Energy (GWh)	Peak Demand (MW)	Benefits	Costs	Net Benefits
BAU w/ EE	9,147	3,920	13,067	232	624	152	472
EES	22,357	5,536	27,893	497	1,337	656	681

- **If TEP achieves the EES portfolio goals compared to the BAU with EE case:**
  - **More than twice the total energy savings;**
  - **~210% increase in peak demand savings; and**
  - **~44% improvement in net resource benefits (~$681M total)**

TEP: BAU w/ EE Case and EES Case

Initial DSM Business Model

- **DSM Program Cost Recovery**
  - DSM program budgets are expensed to ratepayers and perfectly recovered in the year the costs are incurred
- **Shareholder Incentive Mechanism**
  - Apply cap of 14% of program costs on an pre-tax basis, assuming all other savings goals to receive this amount are achieved
- **Lost Fixed Cost Recovery Mechanism**
  - None (at this time)

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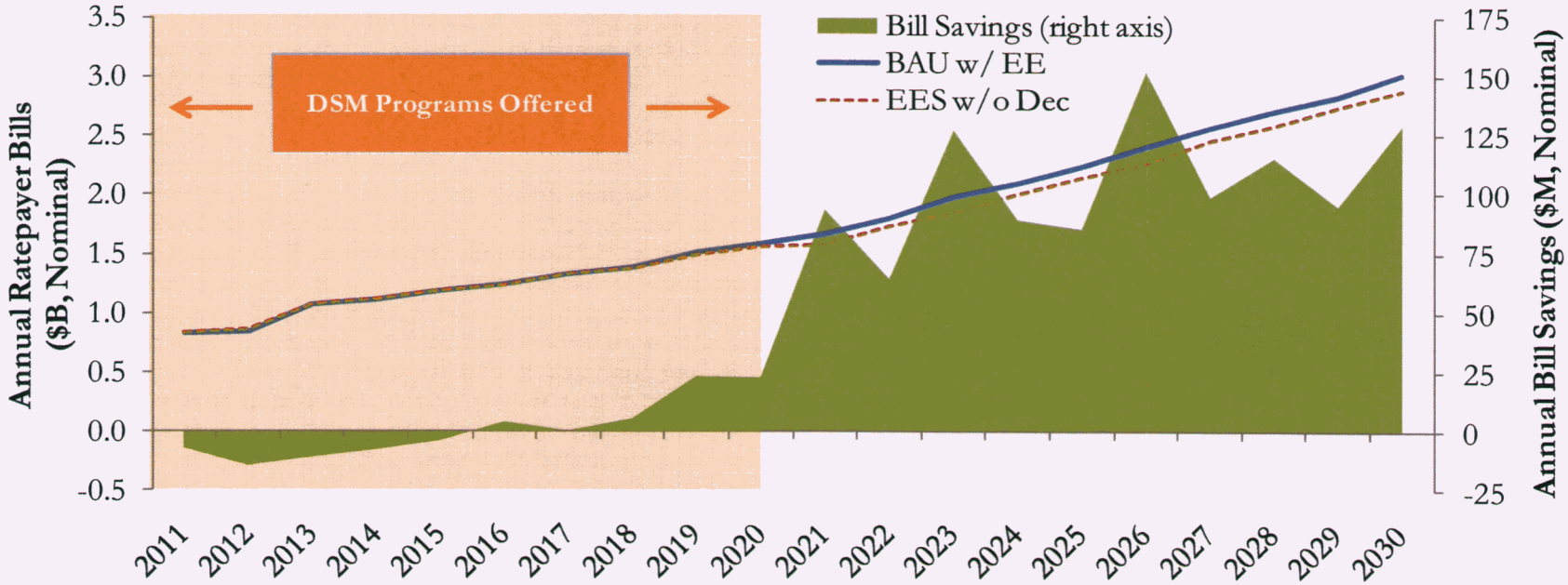
TEP: BAU w/ EE Case vs. EES Case

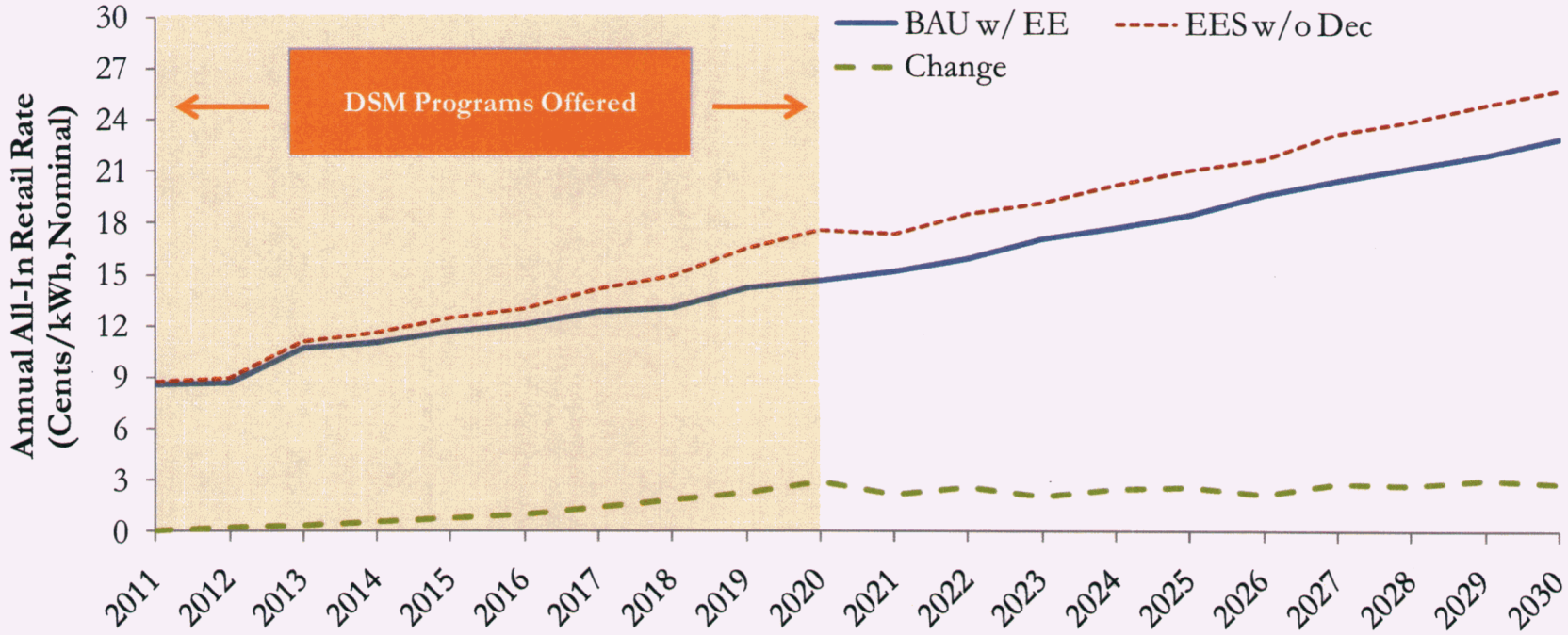
Impact on Ratepayer Bills



- **Bill savings net of program costs accumulate over time (shown in green)**
- **Bill savings ramp up after 2018 as new generation plants begin to be deferred and even more so after 2020 as more plants are deferred and no DSM budgets exist**
- **Customers realize additional bill savings of ~$570M between 2011 and 2030 from EES on top of savings from EE in BAU**

TEP: BAU w/ EE Case vs. EES Case

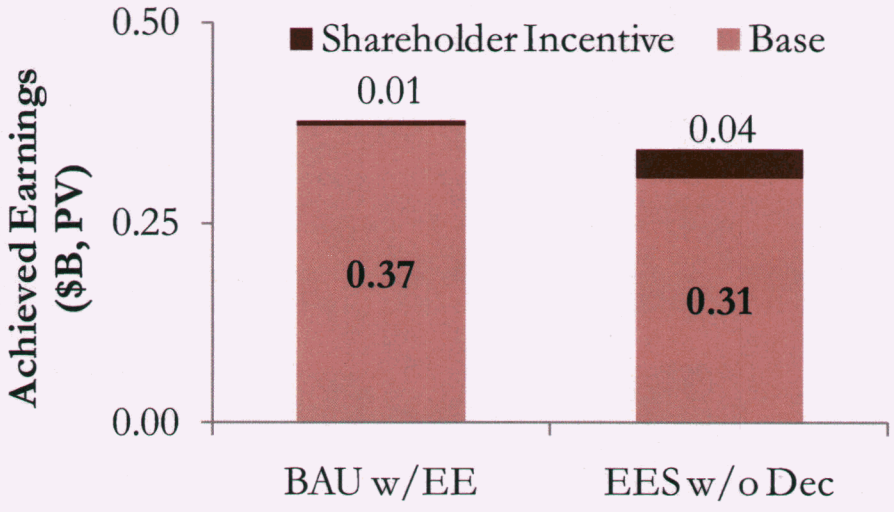
Impact on All-In Average Retail Rates



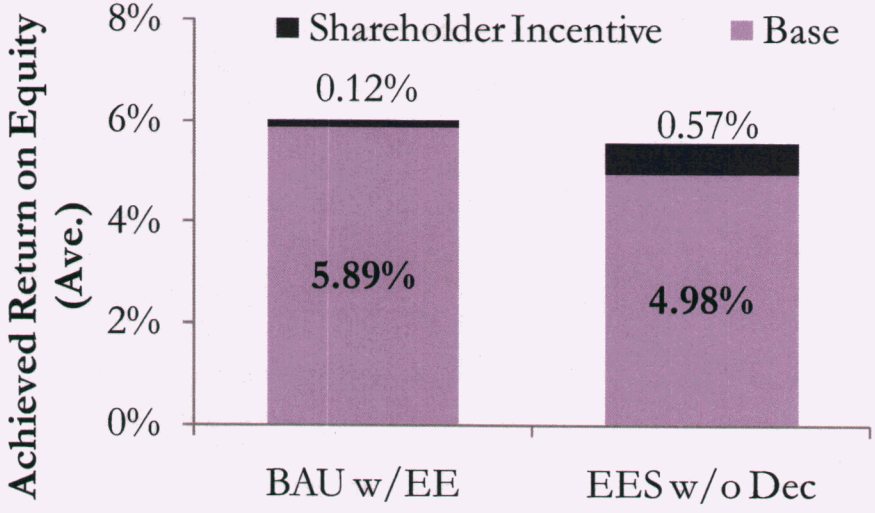
- **In the EES case, TEP annual all-in retail rates are ~1.8¢/kWh higher, on average, than in the BAU w/ EE case**
- **This observed increase in rates is driven primarily by sales reductions from EES**

TEP: BAU w/ EE Case vs. EES Case

Financial Impact on Shareholders w/o Decoupling



	BAU w/EE	EES w/o Dec
Total	$0.38	$0.34

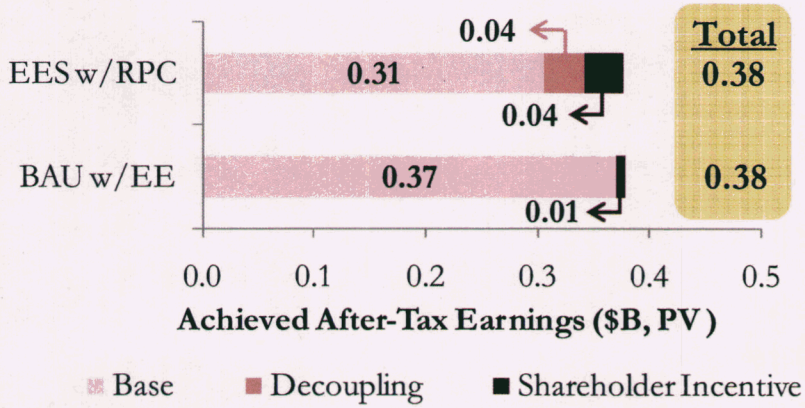


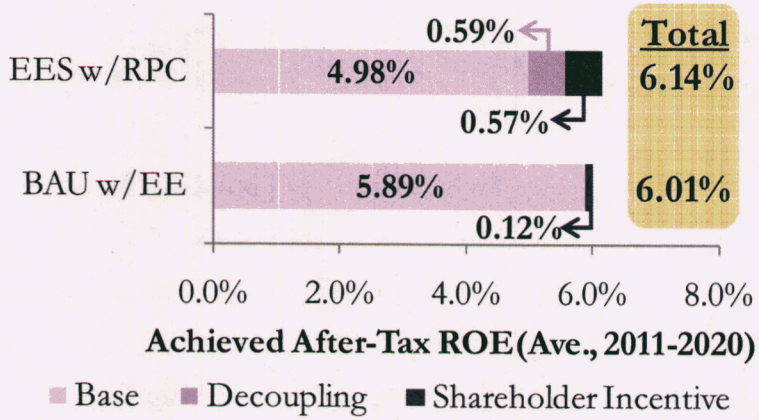
	BAU w/EE	EES w/o Dec
Total	6.01%	5.55%

- **TEP earnings are reduced by~$38M (PV) and average ROE by 46 basis points (0.46 percentage points) while EE programs are implemented to meet EES goals (2011-2020)**

TEP: BAU w/ EE Case vs. EES Case

Financial Impact on Shareholders w/ Decoupling





- **RPC decoupling contributes ~$36M (PV) to TEP earnings and 59 basis points (0.59 percentage points) to average ROE**
- **Application of RPC decoupling, shareholder incentive, and program cost expensing under the EES case provides achieved earnings and ROE levels for TEP that slightly exceed the BAU EE case**

TEP: BAU w/ EE Case vs. EES Case

Financial Impact on Ratepayers w/ Decoupling

- **Between 2011 and 2020, the RPC decoupling mechanism adds ~$70M (PV) or 0.7% to TEP ratepayer bills**
- **The RPC decoupling mechanism increases TEP average all-in retail rates by ~1.0 mills/kWh (or ~0.8%)**

Presentation Overview

- Background
- Analysis Approach
- APS Utility & DSM Characterization
- APS Analysis Results
- TEP Utility & DSM Characterization
- TEP Analysis Results
- **Conclusions**

Conclusions: Ratepayers

- **Total resource net benefits** are ~$2.0B if APS & TEP achieve EES goals without decoupling
- **Total net benefits** to APS & TEP ratepayers are ~$670M higher than the BAU w/ EE case portfolio
- **Customer bills**: APS & TEP customers realize ~$5.2B of PV savings on their utility bills in EES case, net of the increase in all-in retail rates (below)
- **Retail rates**: Annual all-in retail rates are ~1.0 to 1.8¢/kWh higher (on average) for APS & TEP respectively in the EES case compared to the BAU w/ EE case

Conclusions: Shareholders

- **EES case without decoupling mechanism: Average ROE at both APS & TEP *decreases* by ~50 basis points over the 2011-2020 period compared to the BAU w/ EE Case**
- **EES case with RPC decoupling mechanism: The RPC decoupling mechanism contributes ~45-60 basis points to ROE between 2011 and 2020 at a modest additional expense to ratepayers (0.9% of bills)**
  - **In APS case, this produces a slight *decrease* in average ROE compared to the BAU w/ EE case**
  - **In TEP case, this produces a slight *increase* in average ROE compared to the BAU w/ EE case**

Key Drivers to Differences in Results Across Utilities

Key Driver	APS	TEP
Avoided Cost Forecast	↓	↑
DSM Utility Program Cost	↑	↓
Non-Fuel Cost Growth	↑	↓
Generation Expansion	↑	↓
Retail Sales, Peak Demand Customer Growth	↑	↓