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MEMORANDUM

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AZ CORP COMMISSION
DOCKET CONTROL

Arizona Corporation Commission
DOCKETED

JUL 28 2010

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TO: THE COMMISSION

FROM: Utilities Division

DATE: July 28, 2010

RE: TUCSON ELECTRIC POWER COMPANY - APPLICATION FOR APPROVAL OF DIRECT LOAD CONTROL PROGRAMS - RESIDENTIAL AND SMALL COMMERCIAL DIRECT LOAD CONTROL PROGRAM (DOCKET NO. E-01933A-07-0401)

Background

On January 5, 2010, Tucson Electric Power Company ("TEP") filed two proposed Direct Load Control ("DLC") Programs, a Commercial and Industrial Demand Response Program and a Residential and Small Commercial Direct Load Control Program. The Residential and Small Commercial Program is addressed here. The Commercial and Industrial Program was addressed separately and approved by Commission Decision No. 71787.

The Residential and Small Commercial DLC Program ("Program") would target Residential and Small Commercial customers capable of allowing air conditioning or heat pump load to be remotely controlled during peak demand periods. The Program is expected to provide up to 80 MW of load reduction potential within five years upon full implementation. TEP proposes to manage peak demand and mitigate system emergencies with this Program.

Program Concept and Description

An implementation contractor ("IC") would engage in marketing, customer enrollment, software support, installations on customer premises, and other activities to enable TEP to manage peak demand and to mitigate system emergencies through direct control of residential and small commercial central air-conditioners ("AC"). TEP has chosen Tendril Networks, Inc. ("Tendril") to implement the program. Tendril was selected as the IC because of their experience, utility references, and price. TEP has a finalized contract with Tendril.

Tendril would install two-way communication devices at participants' homes or businesses that send load control signals to equipment and also provide consumption data back to TEP. Participants would receive either a thermostat that can be programmed manually or remotely via the internet, or a load control device placed on their outdoor air conditioning unit. Customers would permit TEP to cycle AC units or raise thermostat temperature settings for a limited number of hours per year.

The two-way communication with the customer would allow verification of load impacts and enable TEP to provide usage and billing information to customers via an in-home display or the internet. It is expected that TEP would call 8 to 10 load control events each year. Such events could last from two to four hours. A customer's AC would not be curtailed for the entire event time period, and customers would have the option to change thermostat settings or override cycling strategies during a control event, but could be removed from the Program if they do so repeatedly.

TEP is proposing a two-year pilot program (with the second year a contingency in the event that one year is not enough to assess the technologies or if significant Program changes are needed) to deploy devices in approximately 800 locations, 600 of them residential. The pilot is intended to measure the feasibility and effectiveness of direct control of residential and small commercial air conditioners. Load impact results and customer feedback gained through the pilot would provide information on the cost-effectiveness of this type DLC and suggest enhancements for a broader implementation.

The following are considered key Program elements:

- Use of customers' broadband internet connections with existing meters, reducing the need for more expensive Advanced Metering Infrastructure;
- Two-way communication between TEP and the customer loads being controlled, which would allow for verification of load reductions and enable future dynamic pricing;
- Communications with participating customers regarding household or business usage and their Program activity levels;
- Determine to what degree residential and small commercial customers are amenable to different types of load control (e.g., direct AC cycling or change of thermostat settings). Actual experience with load control events would determine how many events per year, and for what duration, per customer, are acceptable to customers.

Program Participation

The Pilot Program would target approximately 800 customers – 600 residential and 200 small commercial. Sub-groups may be formed to create samples based on geography, load control strategy (e.g., cycling vs. temperature offset), or other factors. Table 1 shows the customer participation goals for the pilot Program.

Table 1 -- Pilot Program Participation Goal

CUSTOMER CLASS *and DLC device*	PARTICIPATION
Residential	**600**
Thermostat Only	*200*
Thermostat & In-home Display	*200*
External Load Switch Only	*200*
Small Commercial (*Thermostat Only*)	**200**
Total	**800**

The Program would be offered to TEP's residential and small commercial electric customers who meet the following criteria:

- The home or building must have direct expansion electric central air conditioning or a heat pump system.
- All AC units serving the home or building must be controllable by TEP.
- The premises must be occupied and the AC expected to be used during the summer months of the pilot Program.
- The customer must have functioning broadband internet service that can be used for data transmission.

It is anticipated that a full Program implementation would enroll 10,000 to 15,000 residential customers per year and 1,000 to 2,000 commercial customers per year for approximately five years. After this time, enrollment would stabilize at approximately 60,000 residential customers and 6,000 commercial customers.

Program participants would be recruited from throughout the TEP service territory. Prior to inviting participation, TEP would establish criteria likely to identify demographic, geographic, and usage information. These criteria would ensure that participants represent the population of eligible customers and are capable of contributing significant load reductions to the system. The marketing campaign would consist of direct mail, bill stuffers, and telemarketing to those customers meeting the initial eligibility criteria.

Participants would receive a $50 incentive, as well as internet-enabled programmable thermostats that would be installed at no charge by a qualified contractor.

The most appropriate level of incentive would be assessed through customer focus groups and a review of the experience during the pilot program.

Delivery Strategy and Administration

The Program would be overseen by TEP employees, and specific implementation tasks would be carried out by the third-party contractor, Tendril.

Tendril's responsibilities would include, but not be limited to:

- Provision of load control equipment and software that can be used by TEP to call and monitor load control events;
- Training on software and assistance in designing effective load control strategies;
- Marketing and recruitment strategy;
- Recruitment of participants;
- Participant tracking and reporting;
- Technology installation (and possibly procurement);
- Call center services; and
- Customer satisfaction/problem resolution.

TEP would be responsible for:

- Managing the contractor and tracking Program implementation; and
- Developing TEP employee training and the protocols for calling load control events.

Monitoring, Evaluation, and Verification

Evaluation of Program processes, customer feedback, technology assessment, and impact assessment would be conducted by an independent evaluation contractor who would not be responsible for Program delivery.

A process evaluation would review how well TEP has administered the program and how customers perceive the program. A program delivery assessment would include interviews with TEP employees, vendors, and participants to identify program strengths, areas for improvement, and features that are preferred or disliked by customers. Customer feedback, obtained through surveys of participants at various stages of the program implementation, would be a major input to process evaluation.

An impact evaluation would address changes in demand during load control events. These demand changes would be estimated using statistical regression modeling and by comparing the expected peak usage during an event with actual peak usage based on interval metered data.

A technology assessment would address the accuracy, reliability, and customer Web portals. The technology assessment would also evaluate interval metered data collection via broadband.

Estimated Peak Demand Savings and Environmental Benefits

For control events lasting three hours, TEP estimates 1.2 kW peak demand savings for a residential customer and 2.0 kW for a small commercial customer. During an emergency control event, TEP estimates 1.8 kW peak demand savings for a residential customer and 4.0 kW for a small commercial customer. Total peak demand savings during the pilot are expected to be about 1,000 kW (1 MW) and are expected to reach between 80,000 kW (80 MW) and 90,000 kW (90 MW) after five years of full Program implementation.

Regarding environmental benefits, it is assumed that savings from the Program would be restricted to demand savings only. Given the relatively short duration of the anticipated load control events, annual reductions in energy usage are expected to be less than 50 kWh per customer. AC loads typically "rebound" after an event as indoor temperature is brought back to normal set points. Thus, overall energy savings are small to non-existent, and environmental benefits would not be significant enough to influence cost-effectiveness or to contribute significantly toward emissions reductions goals.

Program Costs

Program costs for a one-year pilot plus a 15-year Program are estimated to total $74.8 million. The present value of these costs in 2009 dollars is $49 million discounted at 7.0 percent. These costs include participant incentive payments which are excluded in the benefit/cost analysis discussed below.

The cost of the pilot is expected to be approximately $1.1 million for the first year and $462,000 for the optional second year. There would be no equipment purchases or installation in the second year, thus allowing for the significant reduction in the budget.

The projected budget for the full Program ramps up in the first several years, from $6.7 million the first year after the pilot to $11.5 million in the fourth, due to the costs of initial customer recruitment and equipment purchase and installation. Beginning in year 5, acquisition of new customers is expected to taper off and, by year 6, costs are expected to drop to less than $3 million per year as the Program moves into steady-state operation.

Program Cost Effectiveness

Table 2 shows TEP's estimates of the present value ("PV") of benefits and costs for the Residential and Small Commercial Program, and the resultant benefit/cost ratio.

Table 2. Benefits and Costs (Pilot + 15-Year Program)

PV Benefits	$62.2 million
PV Costs	$37.1 million
Net PV (PV Benefits - PV Costs)	$25.1 million
Benefit/Cost Ratio	1.67

In the 1991 Resource Planning Decision, the Commission established the Societal Test as the methodology to be used for determining the cost-effectiveness of DSM programs. Under the Societal Test, the incremental benefits to society must be greater than the incremental costs of having the program in place. That is, the ratio of benefits to costs must be greater than one. The Societal Test includes the cost of the measure and the cost of implementing the program, excluding rebates to customers. The program benefits include avoided demand and energy costs, as well as avoided environmental impacts. However, as noted previously, energy reductions and environmental benefits resulting from the proposed Program are not considered to be significant enough to influence cost-effectiveness or to contribute significantly toward emissions reductions goals. Staff has calculated a benefit/cost ratio of 1.39 using the methodology Staff has utilized for other DSM programs.

Staff expects the Program to be cost-effective over 16 years (one-year pilot plus 15 years Program). The net present value of TEP's estimate of $37 million for program costs implies about $450 per kW for the 80,000 kW of capacity the Program could ultimately avoid. This is far less than the cost of new generation which could be $725 per kW or more for a combustion turbine generator.

Avoided transmission and distribution costs may also be realized, as well as marginal energy savings and the related environmental benefits. As noted previously, these benefits would be considered small relative to the capacity benefits and have not been quantified. The exclusion of these difficult-to-quantify benefits points to the conservative nature of the economic analysis performed by Staff and TEP.

Master Service Agreement - Paragraph 13.1

Both TEP and Tendril have given Staff permission to disclose one section of the otherwise confidential Master Service Agreement between TEP and Tendril. Paragraph 13.1 of the agreement states:

13.1 Without Cause. Either Party shall have the right to terminate this Agreement and any Scope of Work hereunder at any time with or without cause upon thirty (30) days written notice to the non-terminating Party.

Staff is concerned about this paragraph that would allow termination of the agreement by either party without cause. Staff believes that unilateral termination could potentially harm TEP or its customers. For example, TEP may have made substantial investment that could be "stranded" if the contractor pulls out. Also, the Program may be providing real peak demand reductions that could rebound, increasing costs, if the Program were suddenly discontinued. If the Program pilot is succeeding, it should not be suddenly terminated by either party. Therefore, Staff recommends that Paragraph 13.1 be stricken from the agreement. Both TEP and Tendril agree with Staff's recommendation.

Recommendations

Staff recommends that the TEP Residential and Small Commercial Direct Load Control Program pilot be approved as discussed herein.

No explicit approval of the TEP/Tendril contract is recommended; however, Staff recommends that Paragraph 13.1 of the Master Service Agreement be stricken.

Staff recommends that TEP include a comprehensive analysis of the effectiveness of the Program within the DSM reports filed with the Commission. The report shall include, at a minimum:

- Descriptions of program marketing;
- Copies of marketing materials;
- Number of customers enrolled in the program;
- Amount of demand and energy shifted from peak hours;
- TEP's cost savings due to demand reduction and load shifting;
- Total and average cost of installed thermostats and other customer hardware;
- Methodology for measurement and verification of energy use reductions;
- Estimated cost savings to participants; and

- Descriptions of any problems and complaints reported by customers concerning interruptions, temperature set-backs, costs, or other issues.

for Steven M. Olea
Director
Utilities Division

SMO:JJP:lhm\RM

ORIGINATOR: Jeffrey Pasquinelli

BEFORE THE ARIZONA CORPORATION COMMISSION

KRISTIN K. MAYES
Chairman
GARY PIERCE
Commissioner
PAUL NEWMAN
Commissioner
SANDRA D. KENNEDY
Commissioner
BOB STUMP
Commissioner

IN THE MATTER OF THE APPLICATION FOR APPROVAL OF DIRECT LOAD CONTROL PROGRAMS - RESIDENTIAL AND SMALL COMMERCIAL DIRECT LOAD CONTROL PROGRAM.	DOCKET NO. E-01933A-07-0401 DECISION NO. _____ ORDER

Open Meeting
August 12, 2010
Phoenix, Arizona

BY THE COMMISSION:

FINDINGS OF FACT

1. Tucson Electric Power Company ("TEP" or "Company") is certificated to provide electric service as a public service corporation in the State of Arizona.

Background

2. On January 5, 2010, TEP filed two proposed Direct Load Control ("DLC") Programs, a Commercial and Industrial Demand Response Program and a Residential and Small Commercial Direct Load Control Program. The Residential and Small Commercial Program is being addressed here. The Commercial and Industrial Program was addressed previously and approved by Commission Order No. 71787.

3. The Residential and Small Commercial DLC Program ("Program") would target Residential and Small Commercial customers capable of allowing air conditioning or heat pump load to be remotely controlled during peak demand periods. The Program is expected to provide

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up to 80 MW of load reduction potential within five years upon full implementation. TEP proposes to manage peak demand and to mitigate system emergencies with this Program.

Program Concept and Description

4. An implementation contractor ("IC") would engage in marketing, customer enrollment, software support, installations on customer premises, and other activities to enable TEP to manage peak demand and to mitigate system emergencies through direct control of residential and small commercial central air-conditioners ("AC"). TEP has chosen Tendril Networks, Inc. ("Tendril") to implement the program. Tendril was selected as the IC because of their experience, utility references, and price. TEP has a finalized contract with Tendril.

5. Tendril would install two-way communication devices at participants' homes or businesses that send load control signals to equipment and also provide consumption data back to TEP. Participants would receive either a thermostat that can be programmed manually or remotely via the internet, or a load control device placed on their outdoor air conditioning unit. Customers would permit TEP to cycle AC units or raise thermostat temperature settings for a limited number of hours per year.

6. The two-way communication with the customer would allow verification of load impacts and enable TEP to provide usage and billing information to customers via an in-home display or the internet. It is expected that TEP would call 8 to 10 load control events each year. Such events could last from two to four hours. A customer's AC would not be curtailed for the entire event time period, and customers would have the option to change thermostat settings or override cycling strategies during a control event, but could be removed from the Program if they do so repeatedly.

7. TEP is proposing a two-year pilot program (with the second year a contingency in the event that one year is not enough to assess the technologies or if significant Program changes are needed) to deploy devices in approximately 800 locations, 600 of them residential. The pilot is intended to measure the feasibility and effectiveness of direct control of residential and small

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commercial air conditioners. Load impact results and customer feedback gained through the pilot would provide information on the cost-effectiveness of this type DLC and suggest enhancements for a broader implementation.

8. The following are considered key Program elements:

- Use of customers' broadband internet connections with existing meters, reducing the need for more expensive Advanced Metering Infrastructure;
- Two-way communication between TEP and the customer loads being controlled, which would allow for verification of load reductions and enable future dynamic pricing;
- Communications with participating customers regarding household or business usage and their Program activity levels;
- Determine to what degree residential and small commercial customers are amenable to different types of load control (e.g., direct AC cycling or change of thermostat settings). Actual experience with load control events would determine how many events per year, and for what duration per customer, are acceptable to customers.

Program Participation

9. The Pilot Program would target approximately 800 customers – 600 residential and 200 small commercial. Sub-groups may be formed to create samples based on geography, load control strategy (e.g., cycling vs. temperature offset), or other factors. Table 1 shows the customer participation goals for the pilot Program.

Table 1 -- Pilot Program Participation Goal

CUSTOMER CLASS *and DLC device*	**PARTICIPATION**
Residential	**600**
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External Load Switch Only	*200*
Small Commercial (*Thermostat Only*)	**200**
Total	**800**

10. The Program would be offered to TEP's residential and small commercial electric customers who meet the following criteria:

- The home or building must have direct expansion electric central air conditioning or a heat pump system.
- All AC units serving the home or building must be controllable by TEP.
- The premises must be occupied and the AC expected to be used during the summer months of the pilot Program.
- The customer must have functioning broadband internet service that can be used for data transmission.

11. It is anticipated that a full Program implementation would enroll 10,000 to 15,000 residential customers per year and 1,000 to 2,000 commercial customers per year for approximately five years. After this time, enrollment would stabilize at approximately 60,000 residential customers and 6,000 commercial customers.

12. Program participants would be recruited from throughout the TEP service territory. Prior to inviting participation, TEP would establish criteria likely to identify demographic, geographic, and usage information. These criteria would ensure that participants represent the population of eligible customers and are capable of contributing significant load reductions to the system. The marketing campaign would consist of direct mail, bill stuffers, and telemarketing to those customers meeting the initial eligibility criteria.

13. Participants would receive a $50 incentive for participating as well as internet-enabled programmable thermostats that would be installed at no charge by a qualified contractor.

14. The most appropriate level of incentive would be assessed through customer focus groups and a review of the experience during the pilot program.

Delivery Strategy and Administration

15. The Program would be overseen by TEP employees, and specific implementation tasks would be carried out by the third-party contractor, Tendril.

16. Tendril's responsibilities would include, but not be limited to:

- Provision of load control equipment and software that can be used by TEP to call and monitor load control events;
- Training on software and assistance in designing effective load control strategies;

- Marketing and recruitment strategy;
- Recruitment of participants;
- Participant tracking and reporting;
- Technology installation (and possibly procurement);
- Call center services; and
- Customer satisfaction/problem resolution.

17. TEP would be responsible for:

- Managing the contractor and tracking Program implementation; and
- Developing TEP employee training and the protocols for calling load control events.

Monitoring, Evaluation, and Verification

18. Evaluation of Program processes, customer feedback, technology assessment, and impact assessment would be conducted by an independent evaluation contractor who would not be responsible for Program delivery.

A process evaluation would review how well TEP has administered the program and how customers perceive the program. A program delivery assessment would include interviews with TEP employees, vendors, and participants to identify program strengths, areas for improvement, and features that are preferred or disliked by customers. Customer feedback, obtained through surveys of participants at various stages of the program implementation, would be a major input to process evaluation.

19. An impact evaluation would address changes in demand during load control events. These demand changes would be estimated using statistical regression modeling and by comparing the expected peak usage during an event with actual peak usage based on interval metered data.

20. A technology assessment would address the accuracy, reliability, and customer Web portals. The technology assessment would also evaluate interval metered data collection via broadband.

Estimated Peak Demand Savings and Environmental Benefits

21. For control events lasting three hours, TEP estimates 1.2 kW peak demand savings for a residential customer and 2.0 kW for a small commercial customer. During an emergency control event, TEP estimates 1.8 kW peak demand savings for a residential customer and 4.0 kW for a small commercial customer. Total peak demand savings during the pilot are expected to be about 1,000 kW (1 MW) and are expected to reach between 80,000 kW (80 MW) and 90,000 kW (90 MW) after five years of full Program implementation.

22. Regarding environmental benefits, it is assumed that savings from the Program would be restricted to demand savings only. Given the relatively short duration of the anticipated load control events, annual reductions in energy usage are expected to be less than 50 kWh per customer. AC loads typically "rebound" after an event as indoor temperature is brought back to normal set points. Thus, overall energy savings are small to non-existent, and environmental benefits would not be significant enough to influence cost-effectiveness or to contribute significantly toward emissions reductions goals.

Program Costs

23. Program costs for a one-year pilot plus a 15-year Program are estimated to total $74.8 million. The present value of these costs in 2009 dollars is $49 million discounted at 7.0%. These costs include participant incentive payments which are excluded in the benefit/cost analysis discussed below.

24. The cost of the pilot is expected to be approximately $1.1 million for the first year and $462,000 for the optional second year. There would be no equipment purchases or installation in the second year, thus allowing for the significant reduction in the budget.

25. The projected budget for the full Program ramps up in the first several years, from $6.7 million the first year after the pilot to $11.5 million in the fourth, due to the costs of initial customer recruitment and equipment purchase and installation. Beginning in year 5, acquisition of new customers is expected to taper off and, by year 6, costs are expected to drop to less than $3 million per year as the Program moves into steady-state operation.

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Program Cost Effectiveness

26. Table 2 shows TEP's estimates of the present value ("PV") of benefits and costs for the Residential and Small Commercial Program, and the resultant benefit/cost ratio.

Table 2. Benefits and Costs (Pilot + 15-Year Program)

PV Benefits	$62.2 million
PV Costs	$37.1 million
Net PV (PV Benefits - PV Costs)	$25.1 million
Benefit/Cost Ratio	1.67

27. In the 1991 Resource Planning Decision, the Commission established the Societal Test as the methodology to be used for determining the cost-effectiveness of DSM programs. Under the Societal Test, the incremental benefits to society must be greater than the incremental costs of having the program in place. That is, the ratio of benefits to costs must be greater than one. The Societal Test includes the cost of the measure and the cost of implementing the program, excluding rebates to customers. The program benefits include avoided demand and energy costs, as well as avoided environmental impacts. However, as noted previously, energy reductions and environmental benefits resulting from the proposed Program are not considered to be significant enough to influence cost-effectiveness or to contribute significantly toward emissions reductions goals. Staff has calculated a benefit/cost ratio of 1.39 using the methodology Staff has utilized for other demand-side management ("DSM") programs.

28. Staff expects the Program to be cost-effective over 16 years (one-year pilot plus 15 years Program). The net present value of TEP's estimate of $37 million for program costs implies about $450 per kW for the 80,000 kW of capacity the Program could ultimately avoid. This is far less than the cost of new generation which could be $725 per kW or more for a combustion turbine generator.

29. Avoided transmission and distribution costs may also be realized, as well as marginal energy savings and the related environmental benefits. As noted previously, these benefits would be considered small relative to the capacity benefits and have not been quantified.

. . .

The exclusion of these difficult-to-quantify benefits points to the conservative nature of the economic analysis performed by Staff and TEP.

Master Service Agreement - Paragraph 13.1

30. Both TEP and Tendril have given Staff permission to disclose one section of the otherwise confidential Master Service Agreement between TEP and Tendril. Paragraph 13.1 of the agreement states:

> 13.1 Without Cause. Either Party shall have the right to terminate this Agreement and any Scope of Work hereunder at any time with or without cause upon thirty (30) days written notice to the non-terminating Party.

31. Staff is concerned about this paragraph that would allow termination of the agreement by either party without cause. Staff believes that unilateral termination could potentially harm TEP or its customers. For example, TEP may have made substantial investment that could be "stranded" if the contractor pulls out. Also, the Program may be providing real peak demand reductions that could rebound, increasing costs, if the Program were suddenly discontinued. If the Program pilot is succeeding, it should not be suddenly terminated by either party. Therefore, Staff has recommended that Paragraph 13.1 be stricken from the agreement. Both TEP and Tendril agree with Staff's recommendation.

Recommendations

32. Staff has recommended that the TEP Residential and Small Commercial Direct Load Control Program pilot be approved as discussed herein.

33. No explicit approval of the TEP/Tendril contract is recommended; however, Staff has recommended that Paragraph 13.1 of the Master Service Agreement be stricken.

34. Staff has recommended that TEP include a comprehensive analysis of the effectiveness of the Program within the DSM reports filed with the Commission. The report shall include, at a minimum:

- Descriptions of program marketing;
- Copies of marketing materials;

. . .

- Number of customers enrolled in the program;
- Amount of demand and energy shifted from peak hours;
- TEP's cost savings due to demand reduction and load shifting;
- Total and average cost of installed thermostats and other customer hardware;
- Methodology for measurement and verification of energy use reductions;
- Estimated cost savings to participants; and
- Descriptions of any problems and complaints reported by customers concerning interruptions, temperature set-backs, costs, or other issues.

CONCLUSIONS OF LAW

1. TEP is an Arizona public service corporation within the meaning of Article XV, Section 2, of the Arizona Constitution.

2. The Commission has jurisdiction over TEP and over the subject matter of the application.

3. The Commission, having reviewed the application and Staff's Memorandum dated July 28, 2010, concludes that it is in the public interest to approve the Residential and Small Commercial Direct Load Control Program as discussed herein.

ORDER

IT IS THEREFORE ORDERED that Tucson Electric Power Company's Residential and Small Commercial Direct Load Control Program be and hereby is approved as discussed herein.

IT IS FURTHER ORDERED that Tucson Electric Power Company shall include a comprehensive analysis of the effectiveness of the Residential and Small Commercial Direct Load Control Program within the demand-side management reports filed with the Commission and include, at a minimum, the items listed in Finding of Fact No. 37.

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IT IS FURTHER ORDERED that Paragraph 13.1 of the Master Service Agreement between Tucson Electric Power Company and Tendril Networks shall be stricken.

IT IS FURTHER ORDERED that this Decision shall become effective immediately.

BY THE ORDER OF THE ARIZONA CORPORATION COMMISSION

CHAIRMAN COMMISSIONER

COMMISSIONER COMMISSIONER COMMISSIONER

IN WITNESS WHEREOF, I, ERNEST G. JOHNSON, Executive Director of the Arizona Corporation Commission, have hereunto, set my hand and caused the official seal of this Commission to be affixed at the Capitol, in the City of Phoenix, this _____day of _____, 2010.

_____
ERNEST G. JOHNSON
EXECUTIVE DIRECTOR

DISSENT: _____

DISSENT: _____

SMO:JJP:lhm\RM

SERVICE LIST FOR: Tucson Electric Power Company
DOCKET NO. E-01933A-07-0401

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