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**V. Denise Saunders**  
*Associate General Counsel*

May 4, 2016

***Via Electronic Filing***

Oregon Public Utility Commission  
Attention: Filing Center  
201 High Street, Suite 100  
PO Box 1088  
Salem OR 97308-1088

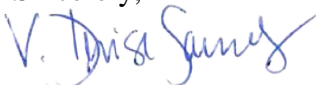
**Re: Docket No. UM \_\_\_\_\_ - Request for Proposals for Renewable Resources**

Attention Filing Center:

Enclosed for filing is Portland General Electric Company's ("PGE") Petition for a Partial Waiver of Competitive Bidding Guidelines and Approval of RFP Schedule. Also enclosed is a Motion for Protective Order. Both filings relate to a Renewable RFP that PGE intends to file with the Oregon Public Utility Commission (Commission). PGE is requesting expedited consideration of both filings and also requests that the Commission open one docket for consideration of these filings and the RFP.

PGE is providing a copy of these filings to all parties and interested persons in PGE's most recent general rate case, RFP and IRP dockets as per Competitive Bidding Guideline 2 (Order 14-149, Appendix A).

Thank you in advance for your assistance.

Sincerely,  
  
V. Denise Saunders  
Associate General Counsel

VDS:bop

cc: Service Lists for UM 1535, UM 1613, LC 56 and UE 294

**BEFORE THE PUBLIC UTILITY COMMISSION  
OF OREGON**

UM \_\_\_\_\_

In the Matter of

PORTLAND GENERAL ELECTRIC  
COMPANY,

Request for Proposals for Renewable Resources.

**PETITION FOR A PARTIAL WAIVER  
OF COMPETITIVE BIDDING  
GUIDELINES AND APPROVAL OF  
RFP SCHEDULE**

**(Expedited Consideration Requested)**

Pursuant to OAR 860-001-0000 and Guideline 2(c) of the Oregon Public Utility Commission (Commission) Competitive Bidding Guidelines<sup>1</sup>, Portland General Electric Company (PGE or Company) seeks a partial waiver of two of the Commission’s Competitive Bidding Guidelines and approval of a proposed Request for Proposals (RFP) schedule. PGE makes this request in order to issue a fast-track RFP for renewable energy that can take full advantage of the recent extension of the federal Renewable Electricity Production Tax Credit (PTC), thereby allowing PGE the opportunity to deliver substantial value to its customers while at the same time ensuring that there is sufficient regulatory oversight to instill confidence in the fairness of the RFP process and its outcome.

While the impetus for the proposed RFP is to attempt to capture the full value of the PTC, the RFP will solicit all RPS-qualified resource options. PGE will not submit a benchmark proposal into the RFP. As discussed below, in order to receive the full value of the PTC, a resource must have commenced construction by December 31, 2016. PGE intends to follow the majority of the comprehensive regulatory process envisioned by the Guidelines; however it must

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<sup>1</sup> *Investigation Regarding Competitive Bidding*, Docket UM 1182, Order No. 06-446 (August 10, 2006) as amended by Order No. 14-149 (April 30, 2014) (Competitive Bidding Guidelines or Guidelines).

do so on a tightly compressed schedule in order to complete an RFP in time to acquire renewable energy with the potential of qualifying for the full value of the PTC.

## **I. BACKGROUND.**

### **A. The Tax Incentives.**

The PTC is a federal tax incentive that provides a financial benefit to support the development and construction of renewable resources.<sup>2</sup> While several renewable technologies qualify for the PTC, wind projects have been the primary recipient. PTC-eligible wind projects qualify for the current approximately \$23/MWh federal tax credit for generation occurring during the first ten years of the facility's commercial operation. In December 2015, Congress extended the previously expired full PTC benefit through December 31, 2016 as a part of the Consolidated Appropriations Act of 2016 (Act). Additionally, Congress provided for a phase-down of the PTC available to new wind energy facilities that begin construction<sup>3</sup> after December 31, 2016 but before January 1, 2020. The phased-down amount of the credit is represented as a percentage of the 2016 credit amount available for wind facilities. The PTC benefit schedule approved as part of the Act is as follows:

1. Begin Construction before 1/1/17- 100% of allowed credit
2. Begin Construction before 1/1/18- 80% of allowed credit
3. Begin Construction before 1/1/19- 60% of allowed credit
4. Begin Construction before 1/1/20- 40% of allowed credit
5. Begin Construction after 1/1/20- no PTC available

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<sup>2</sup> Information about the PTC and ITC, including the information described in this section can be found at: <http://energy.gov/savings/renewable-electricity-production-tax-credit-ptc> and <http://energy.gov/savings/business-energy-investment-tax-credit-itc>.

<sup>3</sup> The Internal Revenue Service is expected to issue guidance for determining the commencement of construction and the commercial on-line date for tax credit purposes. PGE will make any necessary adjustments to the RFP once the guidance is issued.

In addition, the Act extended the PTC for other eligible renewable energy technologies commencing construction by December 31, 2016. Closed-loop biomass and geothermal energy resources are eligible for the PTC. Open-loop biomass, landfill gas, municipal solid waste, qualified hydroelectric and marine and hydrokinetic energy resources are eligible for a lower PTC.

The Act also extended the 30% ITC for solar if projects commence construction before the end of 2019. For projects commencing construction after 2019, the ITC amount available is phased down as noted below:

1. Begin construction before 1/1/2020 – 30% ITC benefit allowed
2. Begin construction before 1/1/2021 – 26% ITC benefit allowed
3. Begin construction before 1/1/2022 – 22% ITC benefit allowed
4. Begin construction on or after 1/1/2022 – 10% ITC benefit allowed

**B. PGE’s Need for New Renewable Resources.**

PGE’s need for renewable resources will increase significantly beginning in 2020. PGE has presented its analysis of this increased renewable resource need in several stakeholder workshops and meetings which have been conducted as part of the development of its 2016 Integrated Resource Plan (IRP).<sup>4</sup> These workshops and meetings have included presentations and discussions on PGE’s long-term load growth forecasts, adoption of energy efficiency, changing Renewable Portfolio Standards (RPS) requirements, and the resultant RPS need. PGE will include an extensive discussion of its analysis and results in the 2016 IRP which PGE intends to file in the second half of 2016.

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<sup>4</sup> A list of IRP workshops and meetings can be found at <https://www.portlandgeneral.com/our-company/energy-strategy/resource-planning/integrated-resource-planning>.

In 2020, Oregon's RPS increases from present levels to twenty percent of retail load.<sup>5</sup> In 2025, the standard elevates again to twenty-seven percent of retail load.<sup>6</sup> PGE's current forecasts show that it will need approximately 70 average megawatts (MWa) of renewable resource capacity additions in 2020 to comply with the RPS and approximately 183 additional average megawatts in 2025 (253 MWa cumulative).<sup>7</sup> As an alternative to physical compliance with the RPS, one option for PGE is to retire existing renewable energy credits (RECs) from its banked supply. As demonstrated in the Lindsay Affidavit included as Exhibit A, when comparing compliance strategies, PGE finds that it costs less to capture the PTC and physically comply with the 2020 RPS standard than to use banked RECs to delay renewable additions until 2025. PGE's cost estimates of new renewable resources indicates that capture of the PTC lowers the compliance cost even when considering the extended availability of the ITC for eligible technologies.

PGE's analysis demonstrates that the value of capturing the PTC is significant. PGE has evaluated the expected revenue requirement associated with the timing of new renewable resource additions and compared the results on a comparable, net present value revenue requirement (NPVRR) basis. The results of this analysis are shown in the Lindsay Affidavit. As shown in the affidavit, a strategy that achieves RPS compliance by capturing the full PTC value and adding 70 MWa of renewable resources in 2018 will reduce NPVRR by \$75-\$100 million as compared to adding 253 MWa of renewable resources in 2025. An addition of 70 MWa of renewable resource generation that qualifies for the eighty percent PTC reduces NPVRR by an

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<sup>5</sup> ORS 469A.005(1), as amended by Oregon Senate Bill 1547, enacted February 29, 2016.

<sup>6</sup> *Id.*

<sup>7</sup> See Affidavit of James Lindsay, paragraph 3, attached as Exhibit A (Lindsay Affidavit). These amounts may change depending on changes in factors such as our load forecast or our increasing Qualifying Facility purchase obligations.

estimated \$50-\$70 million. Acquiring more than 70 MWa increases savings further by allowing a larger portion of the 2025 RPS obligation to be met by either full or eighty percent PTC-eligible generation. For example, a 175 MWa resource qualifying for the 100% PTC would lower NPVRR by \$185-\$235 million compared to the \$75-\$100 million in value for 70MWa.

In short, PGE's analysis indicates that capturing the PTC as early as feasible is a robust strategy to reduce renewable resource costs for customers. The benefit of early PTC capture outweighs the costs, even when considering the impact of the time value of money, the forecasted decline in technology capital costs, and the opportunity to build alternative renewable technologies.

Near-term renewable resource additions also allow PGE to sustain and build the Company's REC bank which provides protection against short-term risks related to weather (i.e., under-production of existing resources), growing long-term RPS compliance targets, and procurement execution (i.e., projects that fail in the development stage). Were PGE to diminish the REC bank by delaying acquisition of renewable resources until 2025, the Company would have to procure beyond physical requirements in order to meet the increasing REC banking target and achieve the risk protection the REC bank provides. Capturing the PTC reduces expected costs even when ignoring the Company's REC banking target. However, the benefits of near-term renewable additions are increased by also optimizing PGE's REC banking strategy.

## **II. PGE's Proposal for Taking Advantage of Benefits Offered by PTC.**

PGE proposes to issue an RFP to solicit approximately 175 MWa of renewable energy. Although the impetus for the RFP is to capture the full value of the PTC, the RFP will solicit all RPS-qualified resource options, including existing resources, that can capture PTC and ITC tax benefits. It must be run on a "fast track" basis to allow for the solicitation of wind resource

options that are eligible for the full value of the PTC. Qualifying resources for the RFP will include wind, solar, geothermal, biomass, and other RPS eligible resources.

PGE will design the RFP based on the 2012 Renewable RFP which was subject to an extensive public and bidder review process and was ultimately approved by the Commission. As required by the Guidelines, both price and non-price factors will be considered during the evaluation. Non-price scoring factors will evaluate the status and certainty of project development, credit of the counterparty and other key project characteristics, such as location and resource risk. Price scoring factors will evaluate the competitiveness of the offer as well as the value of the output profile when compared to PGE's load and existing portfolio. Interested bidders will be able to submit pricing and proposals for Power Purchase Agreements (PPAs)<sup>8</sup>, Build-Own-Transfer and/or Development Asset Sale structures or variations of these structures for consideration. PGE will not submit a Benchmark Resource into the proposed 2016 Renewable RFP. Instead, PGE will focus its efforts on running a comprehensive, competitive and fair process.

**A. Role of Independent Evaluator.**

PGE recognizes the importance of using an Independent Evaluator (IE) and intends to use an IE to oversee the RFP process to ensure that it is conducted fairly and properly.<sup>9</sup> Consistent with the Guidelines, PGE intends to use an IE to evaluate the design of the RFP,<sup>10</sup> check whether the utility's scoring of the bids and selection of the shortlist are reasonable,<sup>11</sup> prepare a Closing Report for the Commission after selection of the shortlist,<sup>12</sup> and participate in the

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<sup>8</sup> PGE is accepting conventional PPAs and does not require the PPA to include a purchase option.

<sup>9</sup> Guideline 10b

<sup>10</sup> Guideline 6

<sup>11</sup> Guideline 10c and e

<sup>12</sup> Guideline 11

acknowledgement proceeding.<sup>13</sup> As discussed in more detail below, PGE will require a waiver of the IE selection process required under the Guidelines, which could otherwise add two months or more to the schedule. In an effort to ensure that PGE can contract with an experienced IE in time to take advantage of the full PTC PGE intends to use the IE that it used in its last two RFPs.

**B. RFP Schedule.**

As discussed above, in order to capture the full benefit of the PTC, a project must have commenced construction by December 31, 2016. This means that PGE will have to conduct the RFP on a significantly compressed timeline. PGE proposes the following RFP schedule:

<b>RFP Schedule</b>	<b>Date</b>
Engage Independent Evaluator	5/4/2016
Draft RFP provided to all parties and interested persons in the utility’s most recent general rate case, RFP and IRP dockets.	by 5/13/2016
Conduct Bidder/Stakeholder workshop on draft RFP	5/18/2016
Submit final draft RFP to OPUC (with IE assessment)	5/23/2016
Special Public Meeting to solicit comments on final draft RFP	TBD
Commission approves final draft RFP and PGE’s Request for Waiver of Guidelines	6/1/2016
Issue final RFP	6/3/2016
Conduct bidder workshop on final RFP	6/6/2016
RFP proposals from bidders due	6/24/2016
RFP bid scoring and evaluation complete	7/14/2016
Final shortlist selection and notification to bidders	7/15/2016
File Application for acknowledgment of shortlist and IE Closing Report	7/29/2016
OPUC rules on acknowledgment of shortlist	9/29/2016
Final contracts with winning bidders	10/10/2016
Notice to Proceed (if necessary)	Nov-Dec 2016

PGE asks that the Commission approve this schedule. Although PGE recognizes that some of the activities on the schedule may necessarily have to be taken prior to obtaining Commission approval of this Petition, expeditious approval of the schedule and the limited waivers discussed below will provide PGE with assurance that it should continue to pursue the fast-track RFP and

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<sup>13</sup> Guideline 13



attempt to obtain the value of the PTC (and potentially other federal tax incentives) for its customers.

**III. A Partial Waiver of Two of the Guidelines is needed to Provide PGE the Opportunity to Maximize the Value of the PTC for Customers.**

In order to have an opportunity to capture the maximum value of the PTC, PGE must complete the RFP selection process by mid-November.<sup>14</sup> PGE cannot accomplish this and follow the full process required under the Guidelines. At the same time, PGE recognizes that the Guidelines are intended to provide the Commission, bidders, stakeholders and customers with confidence that the utility has conducted a fair solicitation process. PGE has attempted to design an RFP process and schedule that strikes the right balance between moving quickly enough to take advantage of the PTC on behalf of its customers and providing enough regulatory oversight to provide confidence in the fairness of the process and its outcome. However, PGE is not comfortable acquiring a resource under its proposed process unless it obtains a partial waiver of two of the Guidelines.

**A. Proposed Exemptions from the Competitive Bidding Guidelines.**

PGE seeks partial waiver of the following Guidelines, which, if complied with completely, would preclude PGE from acquiring a needed resource in time to maximize the benefits of the PTC:

Guideline 5 – Independent Evaluator (IE). This Guideline requires utilities to use an IE in each RFP to assure fair evaluation of offers. It requires Commission Staff to recommend an IE to the Commission after first obtaining input from the utility and interested, non-bidding

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<sup>14</sup> While the RFP will also solicit resource options that qualify for the ITC, it is the desire to capture the full value of the PTC for our customers that is the main catalyst for the early fast-track RFP and PGE's corresponding request for partial waiver of two of the Guidelines.

parties. The Commission, after receiving such input, then selects or approves the IE. This process typically takes two months.<sup>15</sup>

PGE intends to use an IE in its RFP. However, PGE cannot employ the full IE selection process envisioned by the Competitive Bidding Guidelines and complete a resource solicitation process in time to maximize the PTC. In an effort to ensure that it can contract with an experienced IE in time to take advantage of the full PTC, PGE has contacted, Accion Group, the IE that it used in its last two RFPs. Accion Group was approved by the Commission following the full IE selection process required by the Guidelines.<sup>16</sup> As required by Guideline 5, the IE Accion is independent of the utility and potential bidders and is experienced and competent to perform all IE functions identified in the Guidelines. A copy of the IE's qualifications is attached as Exhibit B.

Guideline 7 – RFP Approval: This Guideline requires the Commission to undertake a public comment process prior to Commission approval of the utility's final RFP. The Guideline indicates that the Commission will target a decision within sixty days after the draft RFP filing, but the Commission obviously cannot commit that the process will be concluded that quickly. In this case, delaying the issuance of the RFP by sixty or more days will make it impossible for the Company to meet the tight timeline required to maximize the value of the PTC. PGE also understands the importance of allowing an opportunity for the public to comment on the final RFP. PGE proposes that the Commission hold a special public meeting to allow for such comment. PGE requests that the Commission waive the 60 days permitted for RFP approval

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<sup>15</sup> See, e.g., Portland General Electric Company, Selection of an Independent Evaluator for Multiple Requests for Proposals, Docket UM 1524, Order No. 11-111 ( *application for approval of IE submitted on February 18, 2011; Order approving IE issues on April 11, 2011*).

<sup>16</sup> See, *Id.*

under Guideline 7 and approve the review and comment process incorporated in the proposed RFP schedule.

**B. Partial Waiver is Warranted Because There is a Time-Limited Resource Opportunity of Unique Value to PGE's Customers.**

In adopting the Competitive Bidding Guidelines, the Commission recognized that there might be circumstances under which a utility might not be able to follow the Guidelines. Therefore, the Commission explicitly permits utilities to seek a waiver of the Guidelines on a case-by-case basis.<sup>17</sup>

Here, PGE seeks such a waiver on the grounds that the extension of the PTC provides a time-limited resource opportunity of unique and significant value to PGE's customers and that opportunity can only be pursued with a partial waiver of two of the Guidelines. The opportunity is time-limited because in order to receive full value of the PTC a resource must have commenced construction by December 31, 2016. In PGE's experience, an RFP conducted pursuant to the full Guidelines can take anywhere from nine months to almost two years, not counting the additional time required for acknowledgment of the final short-list. This timeline simply will not permit a utility to select a resource that can capture the full value of the PTC. As discussed above, the PTC represents a potential value of tens if not hundreds of millions of dollars if PGE can acquire a qualifying resource in time to qualify for the credit. This is certainly a significant value for PGE's customers.

The Commission has previously recognized the importance of waiving some of the Guidelines to allow utilities to take advantage of opportunities similar to those currently presented to PGE. In 2009 it granted a similar waiver to Idaho Power Company (Idaho Power) allowing it to proceed with a fast-track RFP process earlier than expected in order to take

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<sup>17</sup> Guideline 2c.

advantage of federal economic stimulus incentives for deploying new wind generation resources<sup>18</sup>. As it did with Idaho Power, the Commission should act expeditiously here to waive some of Guidelines and to approve the proposed RFP schedule so that PGE can conduct an RFP that has the potential for capturing significant value for PGE's customers.

#### **IV. Need for Expedited Review.**

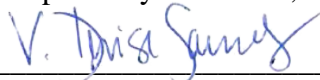
As discussed above, in order to assure that it has the opportunity to maximize the value of the PTC for its customers, PGE must conclude the RFP process by mid-November. PGE therefore requests expedited consideration of this Petition pursuant to OAR 860-001-0420. Specifically, PGE requests that the Commission issue a ruling on the Petition by June 1, 2016.

#### **V. Conclusion.**

For all of the reasons discussed above, PGE respectfully requests that the Commission approve PGE's proposed RFP timeline and grant a partial waiver of the two Competitive Bidding Guidelines described herein. Due to the short timelines required to complete an RFP in time to assure an opportunity to capture the value of the PTC for customers, PGE requests that the Commission grant expedited review of this Petition and issue a ruling by June 1, 2016.

DATED this 4th day of May, 2016.

Respectfully submitted,



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V. Denise Saunders, OSB #903769  
Associate General Counsel  
Portland General Electric Company  
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<sup>18</sup> *Petition for a Partial Waiver of Competitive Bidding Guidelines*, Docket UM 1433, Order No. 09-290 (July 27, 2009).

**BEFORE THE PUBLIC UTILITY COMMISSION  
OF OREGON**

UM \_\_\_\_\_

In the Matter of

PORTLAND GENERAL ELECTRIC  
COMPANY,

Request for Proposals for Renewable Resources.

**AFFIDAVIT OF  
JAMES LINDSAY**

I, James Lindsay, being first duly sworn on oath, depose and say:

1. My name is James Lindsay. I am an analyst in PGE’s integrated resource planning group at Portland General Electric Company (“PGE”). I have been employed in this position since May 2014. Previously I was employed as an analyst at Renewable Northwest. I received a Bachelor of Arts in Physics and History from Bowdoin College.

2. The purpose of this Affidavit is to explain the amount of additional qualifying renewable energy that PGE will need to comply with the Oregon Renewable Portfolio Standard (“RPS”) in 2020 and 2025 and to describe the value to PGE of complying with the RPS by adding new renewable resources and capturing the value of the federal renewable electricity Production Tax Credit (“PTC”).

3. I have analyzed the amount of additional qualifying renewable energy that would be needed to comply with the RPS in 2020 and 2025. My analysis shows that, on a forecast basis, PGE will need approximately 70 MWa of renewable resource additions by 2020 to comply with the RPS and an additional 183 MWa by 2025 (253 MWa cumulative).

4. I also analyzed the value to PGE of complying with the RPS by adding new renewable resources and capturing the value of the PTC. I did this by evaluating the expected

revenue requirement, less the expected energy value, associated with the timing of new renewable resource additions. I compared the results on a comparable, net present value revenue requirement (“NPVRR”) basis. The results of my analysis are shown below in Tables 1 and 2 which identify a range of expected cost reductions associated with the timing and quantity of near-term resource additions.

The first table compares the cost of a near-term addition to a banked REC compliance strategy adding 253 MWa of renewable generation in 2025. The second table compares the cost of a near-term addition to a physical compliance strategy adding 70 MWa in 2020 and 183 MWa in 2025. All portfolios in both tables add 253 MWa of cumulative renewable resources by 2025:

**Table 1**  
 Cost Reductions of Near-term Addition  
 Compared to a 253 MWa addition in 2025 (2016\$)

Near-Team Addition Year↓ Size→	Reduction in NPVRR		
	70 MWa	175 MWa	253 MWa
2018 (100% PTC)	\$75-\$100M	\$185-\$235M	\$265-\$315M
2019 (80% PTC)	\$50-\$70M	\$125-\$170M	\$185-\$225M
2020 (60% PTC)	\$30-\$45M	\$70-\$105M	\$105-\$140M

**Table 2**  
 Cost Reductions of Near-term Addition  
 Compared to a 70 MWa addition in 2020 and a 183 MWa addition in 2025 (2016\$)

Near-Team Addition Year↓ Size→	Reduction in NPVRR		
	70 MWa	175 MWa	253 MWa
2018 (100% PTC)	\$45-\$55M	\$160-\$185M	\$235-\$270M
2019 (80% PTC)	\$20-\$25M	\$100-\$120M	\$155-\$180M
2020 (60% PTC)	\$0-\$0M	\$45-\$60M	\$75-\$95M

The cost reductions identified in the tables above are the result of two revenue requirement analyses. The first study considers the effects of tax credit availability, expected wholesale power prices, targeted renewable energy credit banking levels, the timing of long-term procurement, the forecasted decline in technology capital costs, inflation, and the time value of

money. The second study uses optimization techniques to consider all aforementioned factors, as well as the opportunity to build alternative renewable technologies in future years, taking into account the capacity value of those resources and an estimate of portfolio energy curtailment. The identified cost range is composed of the results from the two analyses. This range largely reflects the difference in the methods' RPS compliance strategies after 2025. The identified ranges do not represent upper and lower bounds on cost reductions. Rather, given resource cost and performance estimates available today, I estimate that the expected savings of a PTC-eligible, near-term addition falls within the identified ranges.

5. The statements above are true and correct to the best of my knowledge, information and belief.

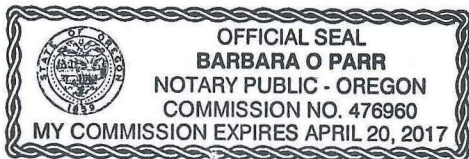
SIGNED this 4<sup>th</sup> day of May, 2016.

James Lindsay  
James Lindsay

State of Oregon )  
 )ss.  
County of Multnomah )

SUBSCRIBED AND SWORN to before me this 4<sup>th</sup> day of May, 2016.

Barbara O. Parr  
Notary Public for Oregon  
My Commission Expires: April 29, 2017





## MEMORANDUM

FROM: Harold T. Judd  
DATE: May 4, 2016  
RE: Accion Group, LLC Services

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Accion Group, LLC, ("Accion") has extensive experience in the electric utility industry and is pleased to present our qualifications to serve as an Independent Evaluator to Portland General Electric Company ("PGE"). Since the time of our last engagement with PGE, Accion personnel have participated in many engagements that, of course, were not included in the statement of qualifications provided years ago. For this reason I am writing to update PGE's knowledge of our experience and skillsets. Also included is my updated Resume. Resumes of additional Accion Consultants will be provided upon request.

### SUMMARY

Accion is recognized as having a nation-wide practice conducting power solicitations. During the past 13 years Accion professionals participated in **86 solicitations** involving a wide variety of technologies, fuel sources, and terms requiring the evaluation of supplies from more than a dozen states. This broad array of jurisdictions provides Accion with current insight into industry trends nationwide.

Accion provides an array of experienced professionals with extensive expertise in relevant areas, including:

- Evaluation and dispatch modeling
- Transmission and distribution systems
- Power plant construction and operation
- Legal services, e.g., contracting and contract review, including
  - PPA
  - APSA
  - Green field development
  - Turnkey projects
- Risk analysis

Our ability to provide subject-matter experts assures PGE that our review and advice will be targeted to specific issues, with expertise, rather than opinion, to support positions. Each of these lead consultants brings decades of practical, hands-on experience in the electric utility industry, typically having had senior management responsibility.

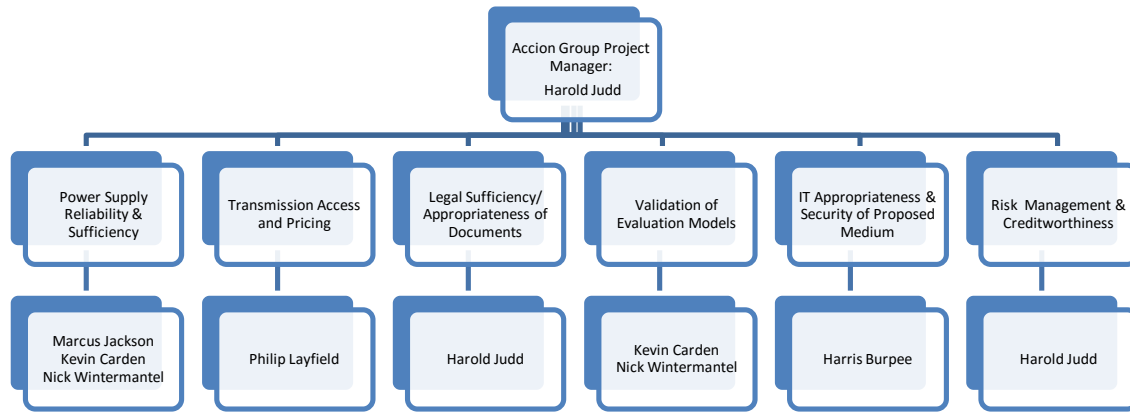
EXHIBIT B  
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Table 1 provides a summary of the expertise of our lead consultants.

**Table 1**



## EVALUATION MODELING

In each engagement Accion consultants independently recreate Renewable Premium calculations for any type of resource given and hourly profile, RA value inputs, TOD factors, and hourly market prices. Accion personnel also have extensive experience in Ventyx tools Prosym, PROMOD, and Strategist as well as Epis AuroraXMP, with which a fully independent analysis can be performed, should PGE prefer an alternative approach to using “mock bids” to verify the performance of PGE’s modeling.

Mr. Carden designed, developed and managed the construction of Strategic Energy and Risk Valuation Model (“SERVM”), one of the most comprehensive energy risk analysis software packages available in the utility industry. Accion is prepared to use SERVM to:

- Model entire CAISO region;
- Develop hourly market prices to conduct similar renewable premium calculations; or,
- Simulate every bid through SERVM and calculate system production costs for each offer.

SERVM is used by entities across the U.S. including but not limited to ERCOT, EPRI, MISO, TVA, Southern Company and the CPUC.

Accion consultants are prepared to provide Resource Planning Studies, including

- Market price forecasts;
- Energy Margins for any resource;
- System Production Cost Studies;
- Evaluate environmental/retirement decisions; and
- Evaluation expansion plans.

Accion personnel also perform Resource Adequacy studies, including:

- Loss of Load Expectation
- Optimal Reserve Margin

- Effective load carrying capability of different resources, including
  - Wind/solar
  - Demand response
  - Storage
- Fuel reliability studies
  - Gas/electric interdependency
  - Fuel backup/fixed gas transportation
- Operational intermittent integration studies
  - Penetration studies
  - System flexibility studies
- Transmission interface studies

These studies are performed using designed probabilistic analysis that includes multiple levels of unknowns and multiple resource opportunities. The modeling will simulate one year, 8760 hours chronological commitment and dispatch modeling, in approximately one minute while reviewing over 1,000 scenarios simulating varied weather, load, unit performance and fuel source. SERVIM is capable of providing optimal dispatch analysis in one minute intervals.

#### **TECHNOLOGIES REVIEWED**

Accion has extensive experience evaluating bids for a wide range of technologies, both conventional and emerging. Accion is prepared to review a wide range of technologies, and we have reviewed bids for energy and capacity from the following technologies, in open or technology-specific programs:

- |                  |                    |                     |
|------------------|--------------------|---------------------|
| • Nuclear        | • Coal-fired       | • Bio-fuels         |
| • Wind           | • Geothermal       | • No. 2 Fuel Oil    |
| • Solar–Fixed    | • Storage–Battery  | • Low Sulfur Diesel |
| • Solar–Tracking | • Storage-Flywheel | • Hydroelectric     |
| • Natural gas    | • Wave action      | • Experimental      |

Accion also provided comparison studies of retiring and retrofitting coal-fired units with replacement by other technologies. Accion consultants provide decommissioning financing planning for nuclear power stations, which requires staying abreast of market trends to advise when retirement is appropriate.

#### **ACCION EXPERIENCE WITH NUMEROUS BIDS**

Accion has a proven record over more than a dozen years of successfully and simultaneously managing RFPs with substantial numbers of responses. Typically, Accion evaluates more than 100 responses with each solicitation, however, Accion recently completed a RFP that required the evaluation of **526 bids**, with the evaluation including transmission and system impact.

## **ACCION WEB-BASED PLATFORM – COST SAVINGS**

The Accion solicitation website permits Accion to simultaneously serve as IE on multiple solicitations in different jurisdictions. Our ability to receive all information, and therefore evaluate bids, electronically permits us to perform evaluations from our offices. This approach avoids unnecessary travel and associated expenses by Accion, and saves time for the client. The platform also permits us to quickly identify differences among bids, and to provide preliminary rankings when bid forms are built to strictly define acceptable products and terms. This ability to sort and rank bids can be used to concentrate in-depth evaluation efforts on the most attractive bids, which can both shorten the review process and control the investment of personnel. Our process is also used to produce a contract for each of the selected bids.

## **NATIONWIDE EXPERIENCE**

Accion maintains a nationwide practice with simultaneous solicitations in a number of states. This exposure to different jurisdictions permits Accion to share the experience and trends from other states when serving as an Independent Evaluator. The review of many of these proposals included evaluation of system impact and wheeling costs. During the past five years Accion has evaluated proposals for energy supplies from projects in the following states:

Alabama	Hawaii	Kansas	Oklahoma
California	Georgia	Mississippi	Tennessee
Colorado	Illinois	Montana	Texas
Florida	Indiana	New Hampshire	Utah
Georgia	Iowa	North Carolina	Washington

Table 2, on the following page, is a summary of recent Independent Evaluator experience of Accion Group.

**Table 2**  
Accion Group - Recent Independent Evaluator Experience

STATE	TERM OF SERVICE (YEARS)	CAPACITY SOUGHT	FUEL SOURCE	INITIAL YEAR
Arizona	Seasonal – 3	2,800 MW	Open	2003
Arizona	Open	Open	Renewable	2006
Arizona	10	175,000 MWh	Renewable	2007
Arizona	Open	90 MW	Open	2007
Arizona	30	230 kW, 115 kW	Open	2008
Arizona	10	250,000 kW	Renewable	2008
Arizona	1, 2, 3, 5, 10, 15, 20	25 MW Increments	Open	2008
Arizona	2, 3, 5	10 MW Increments	Open	2008
Arizona	10	150,000 MWh	Renewable	2010
Arizona	10-20	100,000 MWh	Wind	2012
Arizona	10 – 20	50,000 MWh	Solar	2012
Arizona	20-30	200,000 MWh	Renewable	2012
Arizona	Open	100,000 MWh	Wind	2011
Arizona	20 with options	20 MW	Solar	2016
Arizona	10	10 MW	Energy Storage	2016
California	5 - 15	260 MW	Renewable	2012
California	10, 15, 20	518.8 MW/year	Renewable-RAM	2011
California	10, 15, 20	186 MW	Renewable-RAM	2012
California	10, 15, 20	186 MW	Renewable-RAM	2013
California	10, 15, 20	186 MW	Renewable-RAM	2014
California	10, 15, 20	186 MW	Renewable-RAM	2015
California	1, 15, 20	500 MW	Solar PV only	2013
California	1, 15, 20	500 MW	Solar PV only	2014
California	1, 15, 20	500 MW	Solar PV only	2015
California	10, 15, 20	TBD	Feed In Tariff	2013
California	20	10 MW	Renewable	2017
Colorado	20	30 MW	Wind	2014
Colorado	20	1,000 MW	All Source	2015
Florida	5	500 MW	Open	2009
Florida	Open	800 – 1,000 MW	Open	2014
Georgia	7, 15, 21, 30	1,200 MW	Open	2009
Georgia	7, 15, 30	2,000 MW	Open	2010
Georgia	40	1,250 MW (self-build)	Natural gas	2011
Georgia	20	80,000 MWh	Renewable	2011
Georgia	5, 10, 15, 30	1,300 MW	Open	2012
Georgia	5, 10, 15	800 – 1,200 MW	Open	2013-14
Georgia	5, 10, 15	1,000 MW	Open	2015
Georgia	40	600 – 1,200 MW	Open/Nuclear incl.	2016-17
Georgia	10	100 kW – 1,000 kW	Solar	2012
Georgia	20	60 MW	Solar	2015
Georgia	20	60 MW	Solar	2016
Georgia	30	425 MW	Solar	2016
Georgia	TBD	TBD	Wind	2015
Georgia	15, 20, 25, 30, 35	100 MW	Solar DG	2016
Hawaii	Open	20 – 25 MW	Open/Renewable pref.	2008
Hawaii	Life cycle	Inter-island Transmission	Wind	TBD
Hawaii	20	80 MW	Renewable - FIT	2010
New Hampshire	20	24 MW	Wind	2008
Oregon	Open	50 MW	Open	2009
Oregon	5 – 30	1,700 MW	Open/ IGCC requested	2012-13-14
Oregon	5 – 20	2,000 MW	Open – No coal	2010
Oregon	5 – open	410 MW	Open – Renewable	2010 – 14
Oregon	10 - 20	300-500 MW	Base load Energy	2014
Oregon	5 – 20	200 MW	Capacity	2013
Oregon	10-20	10 MW-101 MWa	Renewable	2013
Oregon	10	25 MW	Demand Response	2013
Oregon	Open	Transmission Curtailment	Wind/Hydro/Bio Fuel	2012

**ACCION EXPERIENCE WITH PRODUCTION COST MODELING, DISPATCH MODELING, ETC.**

Kevin Cardin, one of Accion's lead consultants, developed the Strategic Energy Risk Valuation Model (SERVM). SERVM is the most sophisticated production cost modeling tool available to the electric utility industry, and it is employed by many of the largest utilities in the nation.

Please see the following pages for more detailed information on regarding SERVM.

# Strategic Energy Risk Valuation Model (SERVM)

- SERVM has over 30 years of use and development
- Probabilistic hourly and intra-hour chronological production cost model
- Take into account uncertainties due to weather, load, unit performance, fuel, and environmental legislation
- The model has been vetted by public service commissions throughout the country
- SERVM has been used in a variety of applications for the following entities:
  - Southern Company
  - TVA
  - Louisville Gas & Electric
  - Kentucky Utilities
  - Duke Energy
  - Progress Energy
  - FERC
  - NARUC
  - PNM
  - Malaysia
  - EPRI
  - Santee Cooper
  - CLECO
  - California Public Utility Commission
  - Pacific Gas & Electric
  - ERCOT
  - MISO
  - PJM
  - Terna (Italian Transmission Operator)
  - GASOC
  - NCEMC

# SERVM Model Characteristics

- **Designed for Probabilistic Analysis**
  - Multiple levels of unknowns
  - Multiple recourse opportunities
- **Designed for Speed**
  - Dynamic Programming
  - Indexing
  - Searching
  - Sorting
- **Designed for Calibration and Communication**
  - Discrete SERVM commitment and dispatch solution can be output for each decision interval.
  - Simulations can easily backcast discrete historical scenarios for comparing actual and predicted economic and reliability metrics.

# Resource Commitment and Dispatch

- **Resource Modeling (continued)**
  - Full heat rate curves
  - Startup costs
  - VOM
  - Emissions
- **Commitment decisions on the following time intervals allowing for recourse**
  - Week Ahead
  - Day Ahead
  - 4 Hour Ahead, 3 Hour Ahead, 2 Hour Ahead, 1 Hour Ahead, and Intra- Hour
- **Load, Wind, and Solar Uncertainties at each time interval (decreasing as the prompt hour approaches)**
- **Benchmarked against other production models such as PROSYM**



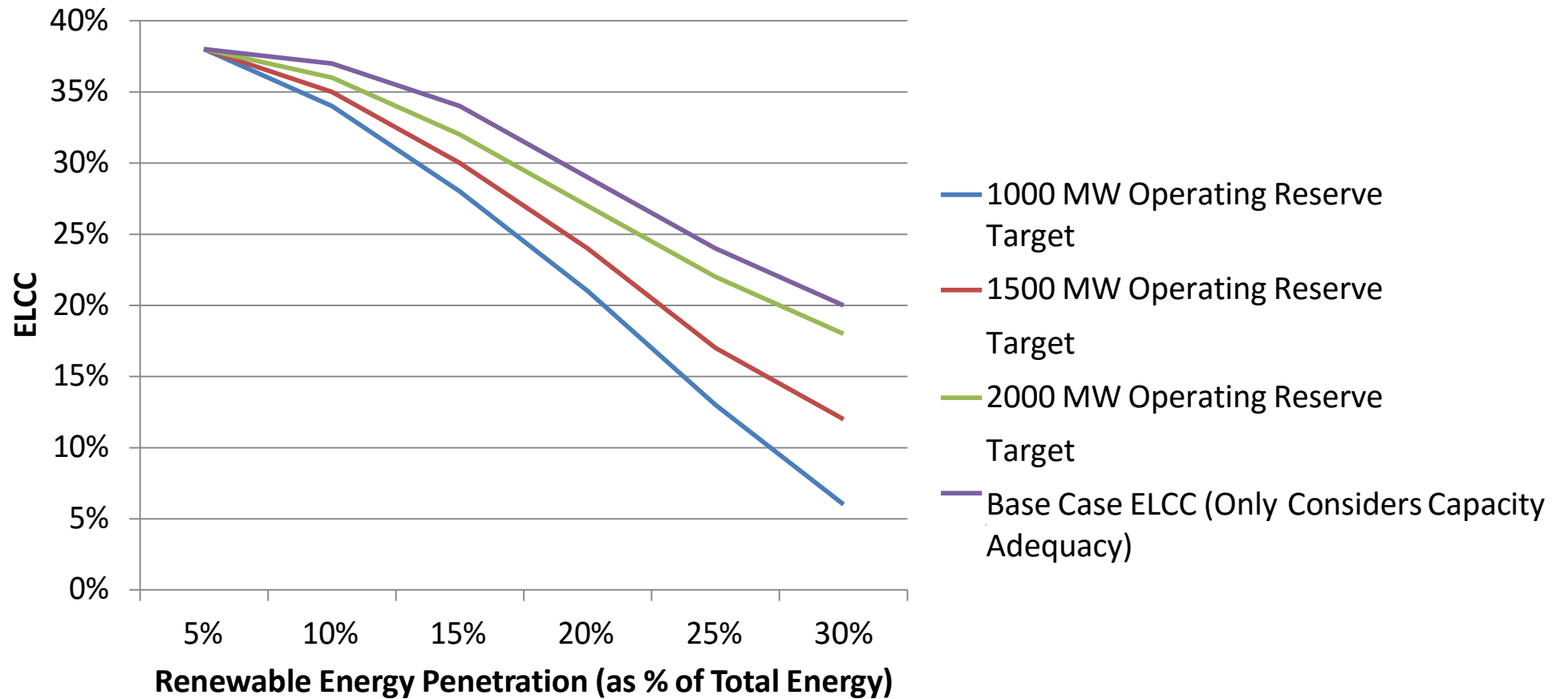
# Resource Commitment and Dispatch

- **8760 Hourly Chronological Commitment and Dispatch Model**
- **Simulates 1 year in approximately 1 minute allowing for 1000's of scenarios to be simulated which vary weather, load, unit performance, and fuel price**
- **Capability to Dispatch to 1 min interval**
- **Respects all Unit Constraints**
  - Capacity maximums and minimums
  - Startup times
  - Min up times, Min down times
  - Must run designations
  - Ramp rates

# SERVIM Framework

- **Study Year (2019)**
- **Capture uncertainty in the following variables by stochastically simulating many scenarios with 1000s of iterations**
  - Weather (35 years of weather history)
    - Impact on Load
    - Impact on Intermittent Resources
    - Impact on Thermal Generation
  - Economic Load Forecast Error (distribution of 5 points)
  - Unit Outage Modeling (50-100 iterations)
    - Multi-state Monte Carlo
    - Frequency and Duration
  - Multi-Area Modeling
    - Neighbor Load and Resources
  - Total Scenario Breakdown: 35 weather years x 5 LFE points = 175 scenarios
  - Total Iteration Breakdown: 175 scenarios \* 50 unit outage iterations = 8,750 iterations

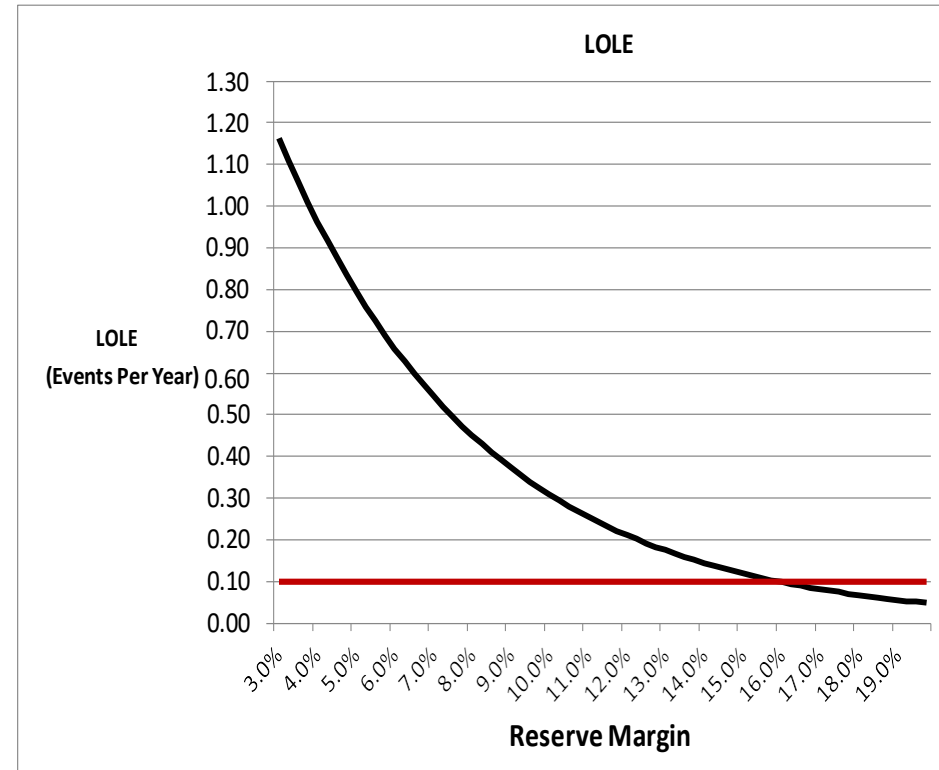
# Interaction with ELCC



Assumes Composite Reliability (Gen + Flex LOLE) Affects ELCC

# Physical Reliability Metric Outputs

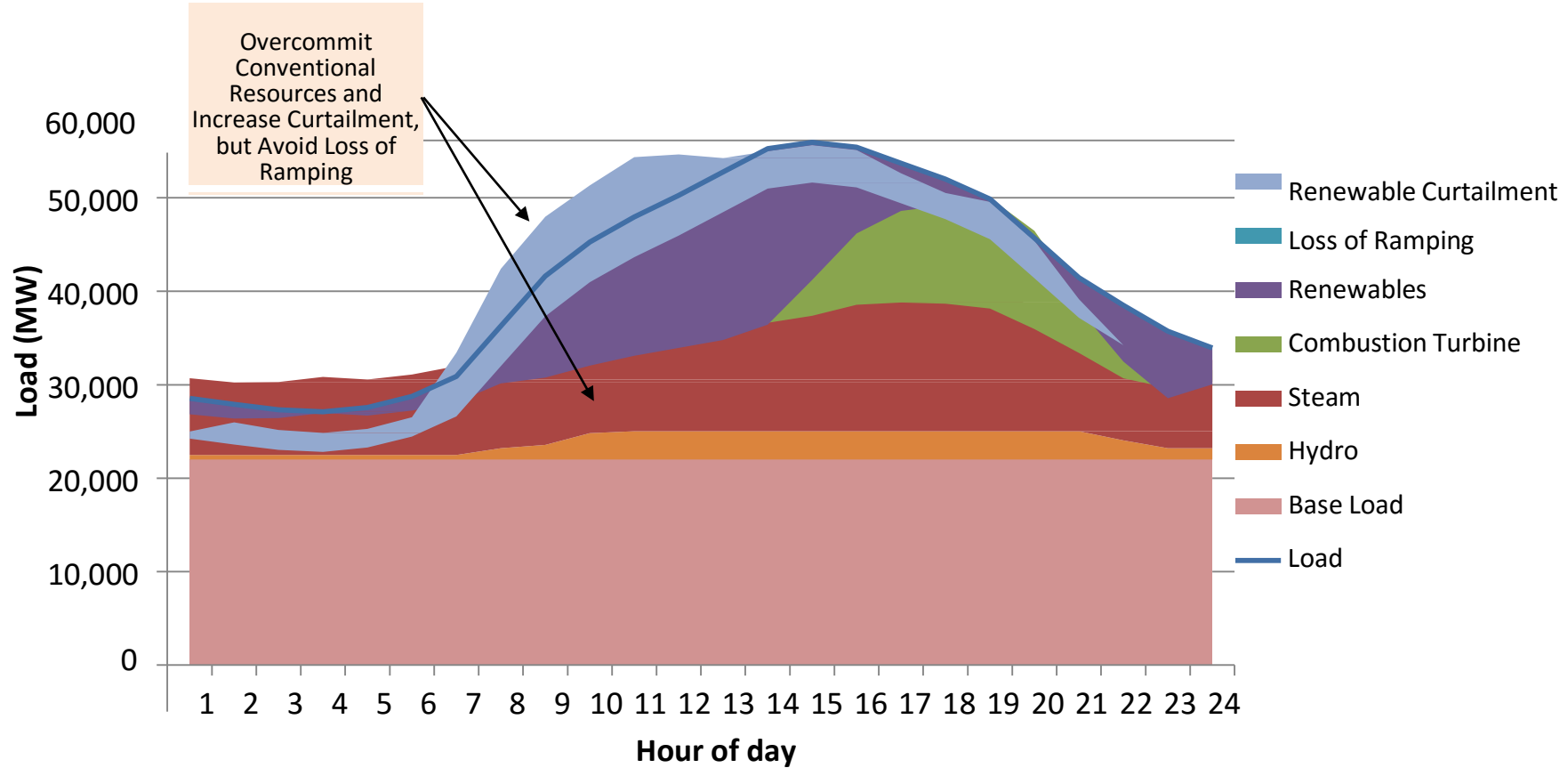
- **Loss of Load Expectation (LOLE):**  
Expected number of firm load shed events in a given year due to capacity shortfalls
- **Loss of Load Hours (LOLH):**  
Expected number of hours of firm load shed in a given year
- **Expected Unserved Energy (EUE):**  
Expected amount of firm load shed in MWh for a given year
- **1 day in 10 Year Resource Adequacy Standard:**  
Used across the industry for setting planning reserve margins and typically defined as 1 event in 10 years or an LOLE of 0.1. Some Define as LOLH of 2.4 hours per year.
- **Calculates ELCC of intermittent resources**



# Ancillary Service Modeling

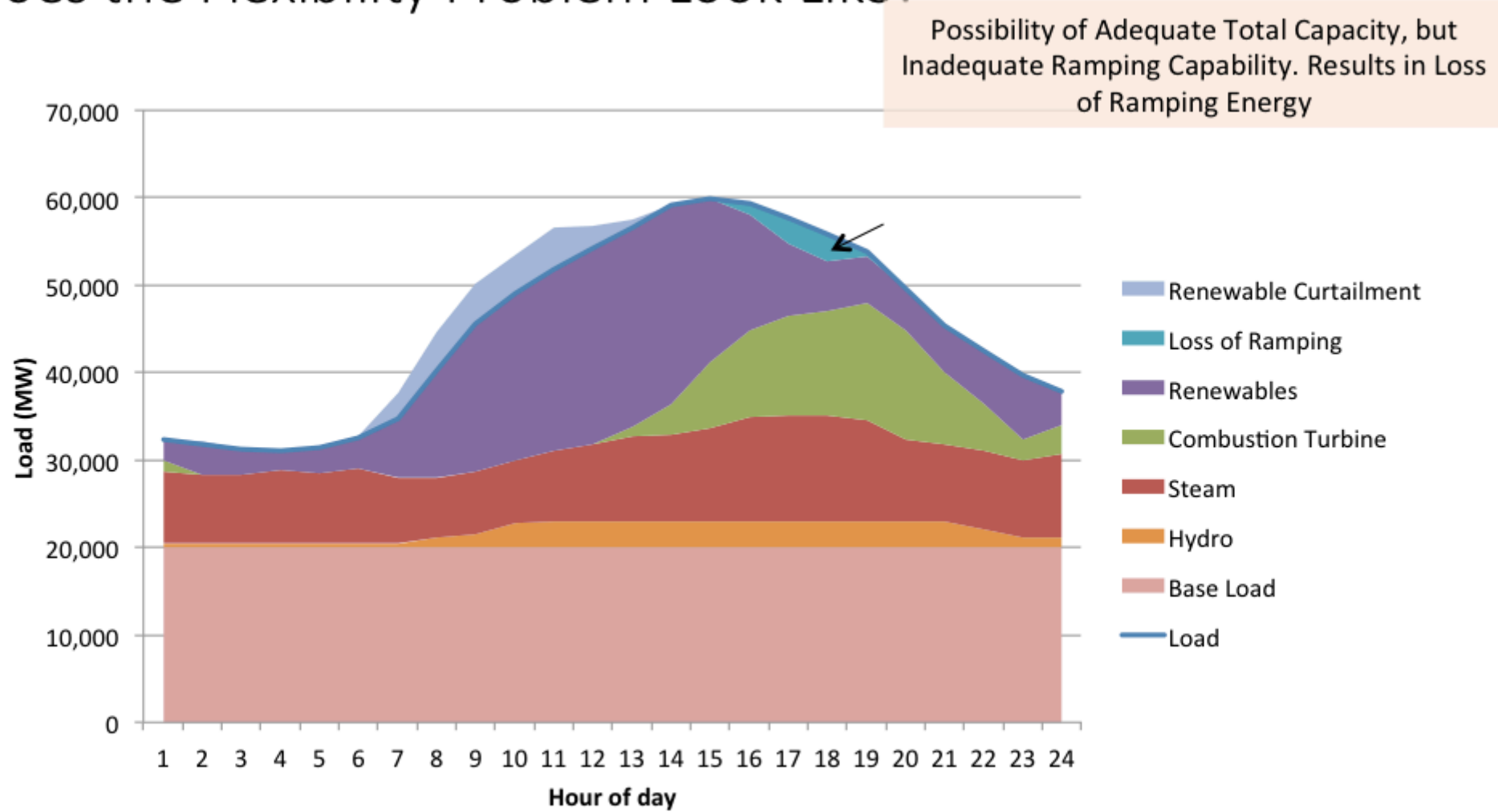
- **Ancillary Services Captured**
  - Regulation Up Reserves
  - Regulation Down Reserves
  - Spinning Reserves
  - Non Spinning Reserves
  - Load Following Reserves
- **Co-optimization of Energy and Ancillary Services**
  - Each committed resource is designated as serving energy or energy plus one of the ancillary services for each period
- **User able to define the point at which firm load is shed**
  - Shed load to maintain regulation up, spinning reserves, or non-spinning reserves

# Solution #3: Overcommit to Reduce Flexibility Needs

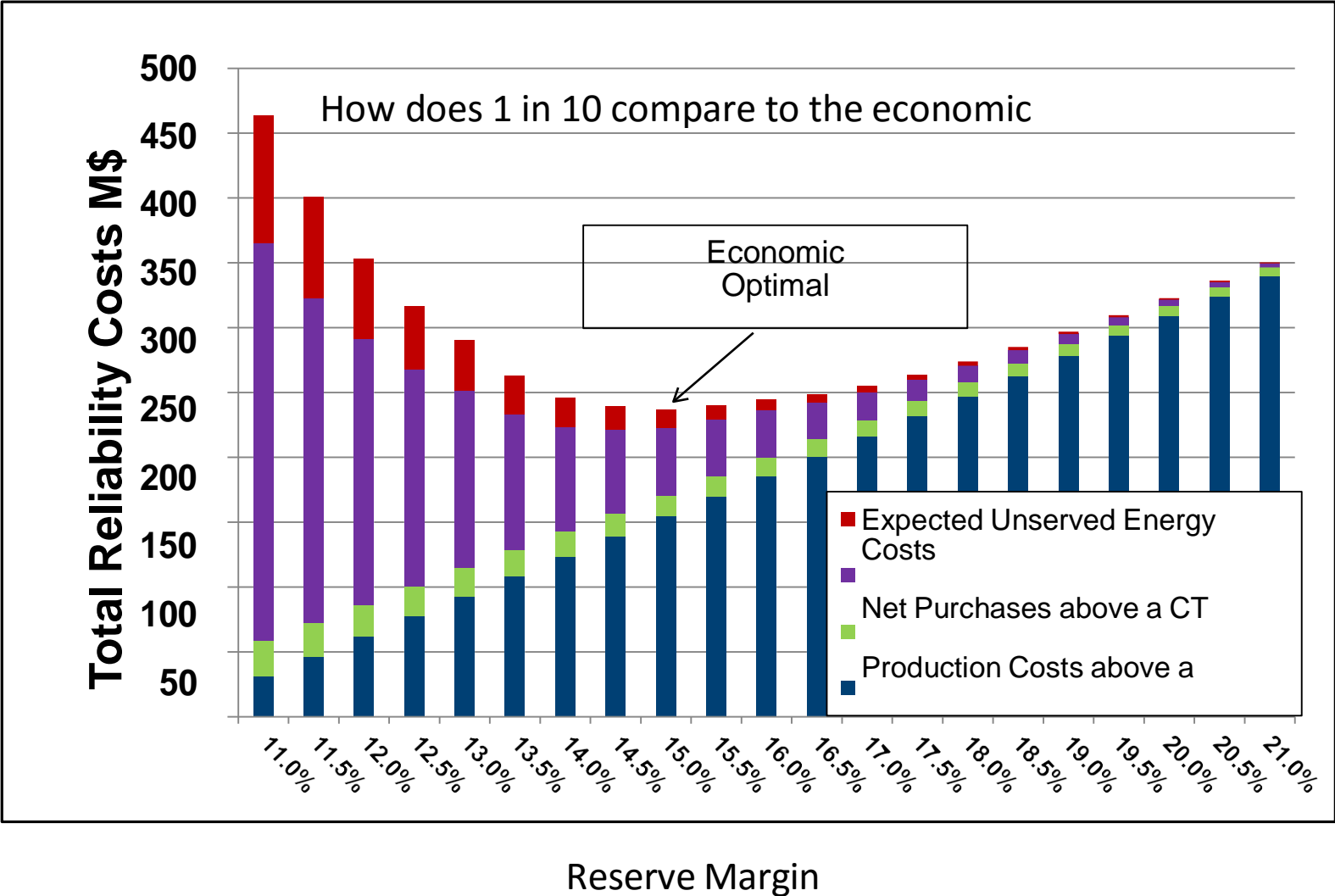


Similar effects of operational strategies on reliability and curtailment can be seen on intra-hour analysis.

# What Does the Flexibility Problem Look Like?



# Economic Reserve Margin





# Economic Outputs

- **Hourly Market Prices (including scarcity pricing)**
- **System Production Costs**
- **Expected Unserved Energy Costs**
- **Risk Metrics**
  - Develop Full Economic Scenarios
    - Weather Uncertainty (on load and resources)
    - Load Uncertainty
    - Unit Outage Uncertainty
    - Fuel Scenarios

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**With more than 35 years of diverse experience** in regulated industries and emerging markets, Mr. Judd leads Accion Group's engagements in the evaluation of power and capacity procurements for competitive solicitations conducted by Accion across the country. His background includes serving as a consumer advocate, federal prosecutor, state's counsel, and counsel for utilities and energy markets, allowing him to contribute thorough knowledge and seasoned leadership during Accion Group's consulting engagements. Mr. Judd also shares with Accion Group his detailed understanding of the issues involved in company and market restructuring, both to meet changing markets and in bankruptcy.

**Experience**

Managed nationwide regulatory and legislative deregulation initiatives for two major U.S. public utilities  
Senior Assistant Attorney General, New Hampshire Office of the Attorney General  
Chief negotiator in the bankruptcies of the Public Service Company of NH and the NH Electric Cooperative  
State consumer advocate, federal prosecutor, and state's counsel  
Economic development advisor to the President and Congress of a newly independent nation  
Adjunct Professor of Law (Utility Regulation) – University of New Hampshire School of Law  
Counsel to the Special Assistant to the President of the United States

**Major Clients**

Arizona Corporation Commission	NH Attorney General's	Public Utilities Commission of Nevada
Arizona Public Service	Office NH Nuclear Decommissioning	San Diego Gas & Electric
Black Hills Energy	Finance Committee	Southern California Edison
Bonneville Power Administration	NH Office of Consumer Affairs	Southern Electric International
Central Maine Power	NH Public Utilities Commission	Town of Lempster, NH
Federated States of Micronesia	NJ Board of Public Utilities	Tucson Electric Power
Georgia Public Service Commission	Pacific Gas & Electric Company	U.S. Department of Energy
Green Mountain Power Corp.	PacifiCorp	Vermont Department of Public Service
Gulf Power Company	PG&E Energy Services	Vermont Electric Cooperative
Hawaiian Electric Company, Inc.	Portland General Electric	White House Consumers Affairs Office
Hawaii Public Utility Commission		Xcel Energy
Maui Electric Company		

**Industry Specialization**

Business Restructuring	Expert Testimony	Mergers and Acquisitions
Competitive Procurement	Government Relations	Nuclear Decommissioning
Construction Monitoring	Legislative Affairs	Regulatory Litigation
Debt Restructuring	Market Deregulation	Risk Management
Electric Market Analysis	Mediation	Strategy Management
Environmental Compliance		

**Education**

J.D., University of New Hampshire School of Law, formerly known as Franklin Pierce Law Center  
B.A., University of Wisconsin – Madison

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## Relevant Experience

### Competitive Procurement

**Arizona Corporation Commission:** Led the design and implementation of the competitive solicitation process for wholesale energy by Arizona's two largest utilities. As the first RFP conducted under new ACC standards, designed the protocols currently used in Arizona. Facilitated agreement among a wide range of interest groups.

**Black Hills Energy:** Served as the Independent Auditor and Independent Evaluator for multiple solicitations for renewable resources. Utility-affiliates were permitted to bid, which required strict adherence to a code of conduct, and complete separation from those evaluating bids.

**Georgia Public Service Commission:** Oversaw IE responsibilities for the solicitation of energy and capacity for RFPs with deliveries beginning in 2009 through 2018. Evaluated appropriateness of power supply acquisition decisions, and advised the Georgia Public Service Commission on matters relating to product selection, costs, and competitiveness. Solicitations range from seeking 1,200 MW of new, installed baseload facilities to soliciting bids to provide 1 MW solar photovoltaic projects. Oversaw the construction monitoring of a 1590 MW Facility at McDonough 3, and responsible for development of the Operating Technical Specifications for the initial operation license application to the NRC for Vogtle Nuclear Station Units 1 and 2, two nuclear units for Georgia Power Company, on behalf of the Commission. Advised regulators on the construction of two additional nuclear units, Vogtle 3 and 4. Evaluated construction planning, terms for contractual services and cost projections structuring. Evaluation also included decommission planning, cost projections, sufficiency of the existing decommissioning trust balances and review of ISFSI planning.

**Gulf Power Company:** Led IE engagement for the solicitation of energy and capacity to meet system needs beginning in 2009 and for the Company's 2012 RFP. Oversaw the development of Gulf's RFP process, and participated in the development of all RFP documents.

**Hawaiian Electric Company, Inc.:** Served as IO for the solicitation of new generation on Maui beginning in 2012 and 2014. Currently serve as main contact and consultant during the IO process for Hawaiian Electric Company's Feed-In Tariff program. Counsel the HPUC on ways to modify and maximize the benefits of a feed-in tariff program. Assisted in the review of Hawaiian Electric's participation in the Big Wind Project.

**PacifiCorp:** As the lead member of Accion's IE team, advised the Oregon Public Utility Commission on PacifiCorp's decisions relating to base load resources expansion, strategic planning for power supply and delivery, supply/customer contracts, and the appropriateness of energy and capacity choices made by the utility.

**Pacific Gas & Electric:** Developed and deployed a web-based solution for PG&E to meet the ReMAT and BioMAT programs requirements established by the California Public Utility Commission.

**Portland General Electric:** Served as the IE for PGE's renewable portfolio RFP, additions to existing conventional generating facility, storage options, demand options, and the construction of a new coal-fired facility. Review included all construction design issues, gas pipeline and transmission designs. Renewable proposals evaluated included wind, bio-mass, geothermal, and wave-action generation.

**San Diego Gas & Electric:** Serves as the Independent Evaluator for a series of solicitations starting in 2012. Products sought included renewable resources. Coordinated the establishment of the California ReMAT and BioMAT programs for SDG&E through an on-line platform.

**Southern California Edison:** Lead the IE team for the recently enacted Southern California Edison's Renewable Auction Mechanism (RAM) program and the "SPVP" solicitations. The solicitations occur every six months, with some overlap of issues, technologies and evaluation responsibilities. Review all protocols, documents, and application of criteria. Coordinated the establishment of the California ReMAT and BioMAT programs, PRP and storage program through an on-line platform.

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### Relevant Experience (Continued)

**Southwest Public Power Resources Group (SPPR)/Arizona Electric Power Cooperative (AEPCCO):** As the director of the IM team, lead the full review of RFP protocols, documents, and evaluation processes. Monitor negotiations and ensure compliance with Code of Conduct requirements.

**Tucson Electric Power Company:** Served as IE for seven solicitations for renewable resources by TEP. Assisted TEP in designing protocols to meet Arizona's Renewable Energy Standard (RES). Advised the Company on solicitation process and design, bidder definition and qualifications, and evaluation standards and protocols. Served as IE and conducted solicitation for 10 MW storage facility, resulting in two units being constructed pursuant to ten-year contracts.

**Xcel Energy:** Served as Independent Evaluator for the solicitation of conventional and renewable resources. As the second IE ever employed in Colorado, refinement of protocols for the solicitation process was required to more closely align with national practices.

### Nuclear Decommissioning

**Exelon:** Advised New Jersey regulators regarding the acquisition of three nuclear units by Exelon. Review included decommissioning funding obligations, decommissioning trust sufficiency, and projected decommissioning costs.

**Nuclear Decommissioning Finance Committee:** Provide full legal and consulting services to the NDFC, from drafting the controlling legislation through to the annual determination of funding contributions. Designed the comprehensive plan for nuclear decommissioning funding, including funding assurances from owners, protections in the event of premature cessation of operation, and funding by non-utility owners.

**Palo Verde Nuclear Power Station:** Advised Arizona regulators on decommissioning costs for the Palo Verde units, including allocation among multi-state owners, sufficiency of ISFSI planning, funding assurances in the event of premature cessation of operation, and preparation for license extension.

## CERTIFICATE OF SERVICE

I hereby certify that I served a true and correct copy of the foregoing documents:  
**PETITION FOR A PARTIAL WAIVER OF COMPETITIVE BIDDING GUIDELINES  
AND APPROVAL OF RFP SCHEDULE** and **MOTION FOR PROTECTIVE ORDER** on  
the following named persons on the date indicated below by email and/or U.S. Mail addressed to  
said persons whose addresses appear on the attached OPUC service list for Dockets Nos. UM  
1535, UM 1613, LC 56 and UE 294.

Dated this 4th day of May, 2016.



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