

Taking a Deeper Look at Standby Rates for Combined Heat and Power

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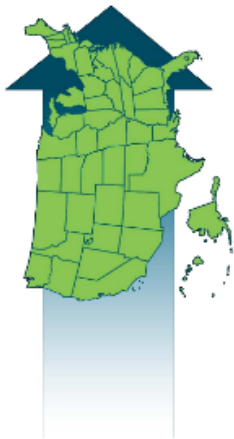
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Guide to the Successful Implementation of State Combined Heat and Power Policies

Industrial Energy Efficiency and Combined Heat and Power
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Introducing Rich and Carl



Today's Agenda

- CHP as a Customer Resource: Fair Compensation in a Time of Transition
- Principles of CHP Standby Rates
- A Deeper Dive
 - Colorado
 - Ohio
- Questions

The Transition Toward “N-way” Transactions

- Technology is making customer resources less expensive
- Technology is enabling customer resource participation
- Power sector institutions are evolving
- What constitutes fair compensation for CHP resources in a time of transition and beyond?

“Designing DG Tariffs Well”: Implications for CHP

- Issues for all Customer Resources

Recognize value is a two (or N) way street

The Full Value of CHP: include all relevant sources of benefit and cost over the long term

No more complicated than necessary

- <http://www.raponline.org/document/download/id/6898>

“Standby Rates for Combined Heat and Power Systems”

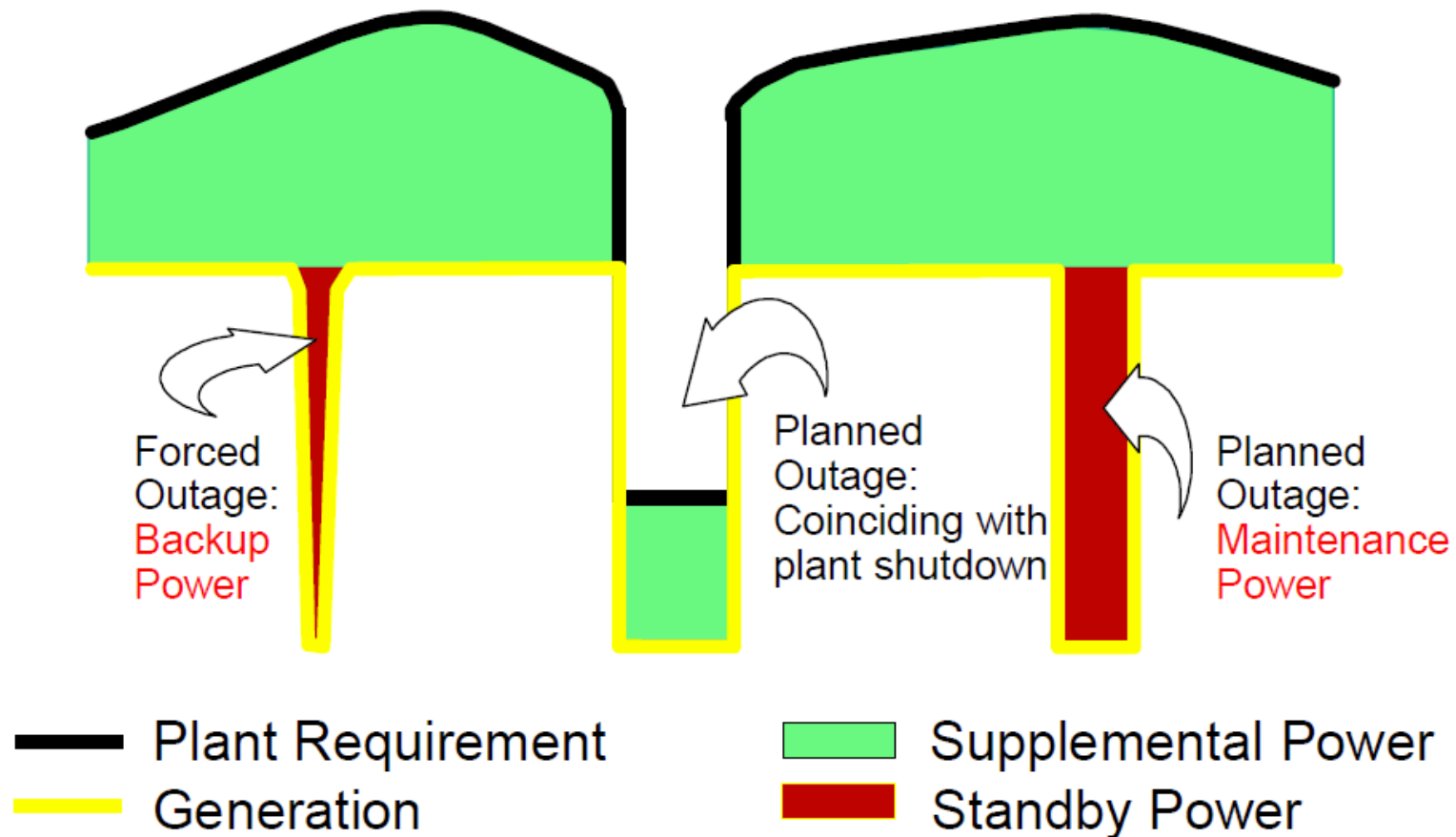
- Prepared by Brubaker & Associates for RAP (Selecky, Iverson, Al-Jabir)
- Sponsored by ORNL & U.S. DOE
- Best Practice Recommendations and 5 Case Studies
- <http://www.raponline.org/document/download/id/7020>

Standby Service Defined

- Set of electric utility products for customers with on-site, non-emergency generation
- Provides for a utility backstop
- Standby Service terms are important

Determine economics of CHP applications vs. utility full requirements service or purchasing power competitively

A Self-Generator's Purchase Requirements



Typical Standby Rate Components

- Capacity reservation charge
- As-used capacity and energy charges
- Maintenance capacity charge
- Facility charges

Standby Rates Best Practices: Allocation of Utility Costs

- Generation, transmission, and distribution charges should be unbundled
- Generation reservation demand charges should be based on the utility's cost and the forced outage rate of customers' generators on the utility's system
- Higher-voltage delivery charges should recognize load diversity

Standby Rates: Best Practices

- **Appropriate Incentives**

Pro-rated daily demand charges

Daily maintenance demand charges --
discounted

- **Customer Options**

Interruptible standby service option

Customers should be able to procure
standby service from the open market

A Few Points about the Examples

- The examples were chosen primarily based on willing in-state interest
- The examples were not chosen based on being current best practices
- The examples were not chosen based on being the tariffs most in need of help
- Observations not intended to condemn, just trying to promote the public interest

Deeper Dive: PSCO in Colorado

- **PSCO Standby Tariffs for CHP > 10 kW**
 - Transmission Standby Service (TST)
 - Primary Standby Service (PST)
- **Charges**
 - Monthly Service and Facilities charge
 - Interconnection charge (TST only)
 - G&T Standby Capacity Fee
 - Distribution Standby Capacity Fee (PST only)
 - Demand and Energy charges

G&T Standby Capacity Design

- Covers 1,051 hours of standby service assuming 100% capacity factor
- Above the “Grace Energy” pay for Demand at the Supplemental capacity price and pay for Energy at the energy usage charge

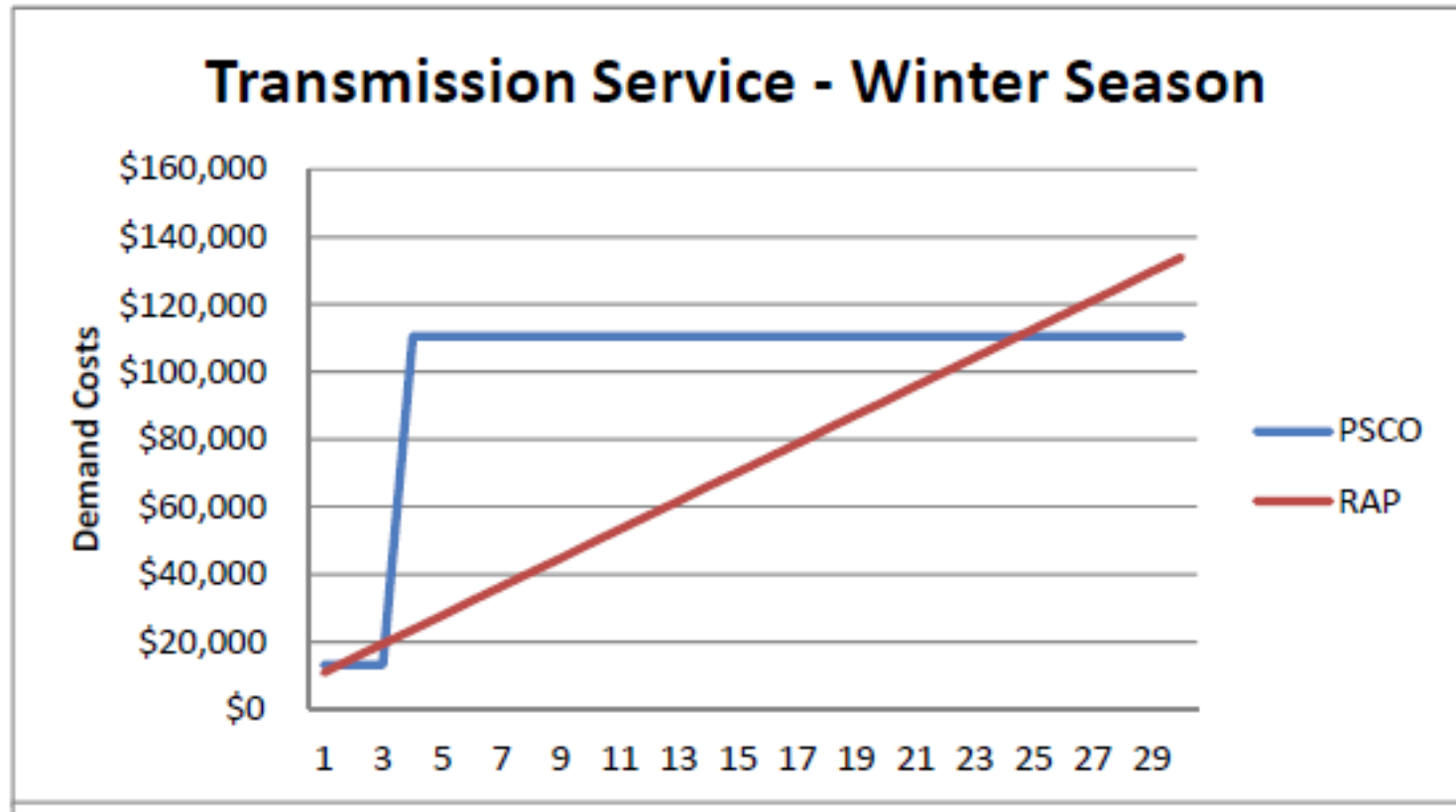
Opportunities for Improving Price Signals Relative to Current Terms

- Currently there is no daily demand charge
- No TOU price signals
- No recognition of load diversity
- G & T costs bundled in reservation fee
- Self-dispatch and market purchases to meet stand-by requirements not allowed

Potential Improvements

- Monthly standby at best FOR unit
- Daily standby demand charges
- Add option to buy back-up power from utility at market prices
- Allow load reduction plans to mitigate back-up charges
- Unbundle G&T in reservation fee
- Reflect load diversity on shared distribution facilities
- Standby back-up demand charges on peak only

Improvement Effects Example



Deeper Dive: AEP in Ohio

- AEP Ohio Power Tariffs for CHP < 50 MW
 - Standby Service provided by AEP (SBS)
 - Standby provided by 3rd Party (OAD-SBS)
- Two Zones
 - Same Tariff structure, different rates for two different zones within AEP Ohio
 - Power service territory

Schedule SBS

- **Terms of Service**

A demand charge based on a forecasted FOR of 5, 10, 15, 20, 25 or 30%

Amount of back-up power available a function of the FOR selected

Excess beyond back-up purchased at supplemental rates AND a much higher capacity charge

Distribution charge based on voltage level

Incremental Transmission recovered in a rider

Schedule OAD-SBS

- **Terms of Service**

Monthly distribution charge based on voltage

Transmission charges based on the OATT

Opportunities for Improvement

- Complex
- FOR selection is risky
- Few price signals available to optimize use of customer and system resources (e.g., no daily demand charge)
- TOU components missing
- No recognition of load diversity
- Little flexibility

Recommendations

- Set monthly demand charge at the system best FOR
- Set daily demand charge
- Add option to buy back-up power from the market through the utility
- Add option to provide load reduction plan
- Reflect load diversity

Recommendations

- Demand charges should apply only on peak hours
- Avoid demand ratchets
- Simplify the tariff terms
- Vary fuel and purchased power prices by time of use
- Specify circumstances where special contracts required

Sample Result

Medium Load Economic Analysis

<u>Self Gen.</u> <u>kW</u>	<u>Forced</u> <u>Outage</u>	<u>Backup</u> <u>kWh</u>	<u>Backup</u> <u>Days</u>	<u>Maint.</u> <u>kWh</u>	<u>Maint.</u> <u>Hours</u>	<u>Maint.</u> <u>Days</u>
4,000	10%	292,000	4	292,000	73	4
<u>Schedule SBS</u>				<u>Modified Schedule SBS</u>		
<u>Standby</u>	<u>\$/kW</u>	<u>\$/kWh</u>	<u>Charges</u>	<u>\$/kW</u>	<u>\$/kWh</u>	<u>Charges</u>
Generation	\$1.741		\$6,964	\$0.483		\$1,932
Transmission	\$0.250		\$1,000	\$0.000		\$0
Distribution	\$3.183		\$12,732	\$2.546		\$10,184
Total			\$20,696			\$12,116
<u>Backup</u>				<u>\$/kW/Day</u>		
Generation				\$0.30600		\$4,896
Transmission		\$0.00356	\$1,040	\$0.06680	\$0.00373	\$2,158
Distribution				\$0.02122		\$340
Total			\$1,040			\$7,393
<u>Maintenance</u>						
Generation		\$0.00280	\$818	\$0.1530		\$2,448
Transmission		\$0.00417	\$1,216	\$0.0334	\$0.00186	\$1,079
Distribution		\$0.00513	\$1,498	\$0.0106		\$170
Total			\$3,532			\$3,697
TOTAL			\$25,268	\$23,206		

Conclusions on CHP Compensation

- Recognize the Full Value of CHP
- Align valuation of all customer resources with the public interest
- Traditional mechanisms can be done well
- Administrative Simplicity is important

Conclusions on Standby Rates

- Generation, reservation and daily demand charges
- Seasonal and on/off-peak charges
- Scheduled maintenance daily demand charge
- Dedicated distribution investment charge
- Load diversity for transmission and shared distribution
- Interruptible option
- Open market standby – if available

About RAP

The Regulatory Assistance Project (RAP) is a global, non-profit team of experts that focuses on the long-term economic and environmental sustainability of the power and natural gas sectors. RAP has deep expertise in regulatory and market policies that:

- Promote economic efficiency
- Protect the environment
- Ensure system reliability
- Allocate system benefits fairly among all consumers

Learn more about RAP at www.raponline.org

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