Community Solar Rate Rider: Schedule No. 500

February 13, 2018
Community Solar Agenda

• Design Principles
• Program Highlights
• Pricing Methodology
• Example Customer Impact
• Conclusion
• Next Steps
Design Principles

• Market Research and focus groups resulted in diverse opinion on program structure and pricing design

• Consistent with Strategic Directive 2:
  • Maintain fair, reasonable and non-discriminatory rates as stated in Nebraska Revised Statute § 70-655
  • Equitably assign costs across and within all customer classes
  • Pursue rate process and structure changes to reflect the cost of energy when it is used
  • Offer flexibility and options; and
  • Ease of understanding
Design Principles

• Transparent and based on actual production and prior year Southwest Power Pool (SPP) day ahead market pricing

• Valuation is consistent with how the market values current or future OPPD generation assets

• Foundations of the design principles would be scalable to accommodate potential future states of large scale adoption of Distributed Energy Resources

• The Brattle Group agrees the methodology complies with reasonable and prudent ratemaking principles
Program Highlights

• Program will require a refundable deposit upon enrollment that could be forfeited for early program departure

• Contract term – five, ten or twenty year contract

• Customer chooses offset between 10% - 50% of usage
  – When combined with OPPD’s existing and planned wind resources, the program would allow participating customers the ability to achieve approximately a ‘100% renewable’ portfolio on an annual basis by 2021
    • Annual customer kWh consumption would be approximately equal to annual kWh generation from renewable resources
    • Inter hour production will be from OPPDs existing generation portfolio
Pricing Methodology

• No consistent pricing structure exists at the national, regional or even state level

• Greatest pricing variations are related to the credit value participants receive. Some examples include:

  – **Full retail rate:** consistent with net metering, but results in significant subsidization by non participants
  – **Embedded cost of generation:** simple approach, but gives solar equal capacity credit compared to baseload units
  – “**Value of Solar**”: diverse interpretations that lack a uniform calculation methodology
Pricing Methodology

• A Southwest Power Pool (SPP) market based approach

• The value expected to be received if all energy from the Community Solar Facility were sold into the SPP Market.
  – Energy priced on prior year actual SPP day ahead prices
  – Capacity factor based on SPP accreditation value
  – Capacity value based on the District’s next marginal generation

• Structure allows all financial and environmental benefits from a Community Solar Project to be passed on to the customers who participate in the program.
Pricing Methodology

- Valuation is based on market values from SPP

- The valuation consists of two value streams:
  - Energy
    - Actual hourly annual community solar production from the prior year
  - Accredited Capacity
    - Annual levelized value of next marginal generation

- Credit Calculation: \((D*S)+(V*C)\)
  - \(D\): SPP day ahead hourly market prices from previous year
  - \(S\): Hourly production shape for community solar
  - \(V\): Annual levelized value of next marginal generation
  - \(C\): SPP accredited capacity value

- Formula will be updated annually
Production Shape to Average Hourly SPP Price

*Average NREL Production shape for OPPD service territory

**2016 SPP Day Ahead Annual Hourly Pricing
Production Shape to Load on Peak

*Expected output of 1 kW AC solar system on 2016 Peak Day*

**System Load in MW on 2016 Peak Day**

*NREL Production shape for OPPD service territory on 8-11-16

**2016 OPPD system load on Peak Day 8-11-16*
### SPP Capacity Accreditation

#### Dispatchable

<table>
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<th>Energy Source</th>
<th>Accreditation</th>
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<tr>
<td>Coal</td>
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<tr>
<td>Gas</td>
<td>100%</td>
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<tr>
<td>Nuclear</td>
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#### Intermittent

<table>
<thead>
<tr>
<th>Energy Source</th>
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<tr>
<td>Solar</td>
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<tr>
<td>Wind*</td>
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* Highest current accreditation value for existing OPPD wind facilities in accordance with standing Southwest Power Pool accreditation policies. Wind & solar accreditation policies require three years of production generation.
Example Cost to Participants

Several factors will influence the cost to participate, including:

• **Cost per kWh**
  – Final cost of community solar project from competing developers, including interconnection

• **Market Values**
  – The market based credit value that will be updated annually
  – Valuation changes are affected by SPP accreditation policies, energy prices and asset performance

• **Tiered Subscription Levels**
  – Customers annual usage
  – How much of their annual usage the customer wants offset with community solar generation
Example Cost to Participants

Below is an *illustrative* examples of each category:

**Cost per kWh**
- Illustrative cost of the yet to be awarded interconnected community solar project ➔ 7.5 cents per kWh
  - *PPA expected to be executed in Q2 of 2018*
- The approximate market based credit value that will be updated annually ➔ 3.6 cents per kWh

**Subscription Level**
- Customer annual usage ➔ 11,000 kwh
- How much of their annual usage the customer wants to offset with community solar ➔ 10%

*Ranges are representative. In aggregation, the above assumptions would result in a 3% bill increase*
Example Cost to Participants

% Bill Increase Based on % of Energy Offset by The Average Customer*

* Figures are estimates based on representative PPA costs. Actual PPA costs will change outcome of analysis.
Conclusion

• Credit value will be tied as closely to SPP market value as possible to pass along all ‘gains and costs’ to participants
• Participation in program is voluntary
• Management’s proposed value is
  – Consistent with Strategic Directives (SD):
    • SD 2 Rates
    • SD 13 Stakeholder Outreach and Communication
  – Lower than some other programs
  – Meets OPPD requirement of a fair, reasonable and non-discriminatory standard
• Proposed pricing lays the foundation for future DER adoption by valuing the assets and energy like the market values the assets and energy
Next Steps

- Customer comment period begins today and will conclude prior to the next board meeting – Via oppdlistens.com

- Public comments will be reported to the Board

- During the March board meeting, Management will report back on public comments and seek a Board Resolution requesting approval of the Community Solar Rate Rider Schedule No. 500