The **Flandreau Santee Sioux Tribe of South Dakota and Nebraska Renewable Energy Systems** present: a case study on the benefits and nuances of behind-the-meter projects and why they work.

FSST is a recipient of DOE’s “Energy Infrastructure Deployment on Tribal Lands – 2019” grant.

The funds awarded are being used to implement the Tribe’s 2019 solar project.
FSST’s Commitment to Building Energy Infrastructure

• The Flandreau Santee Sioux Tribe Utility Commission was est. in 2018 to improve the Tribe’s energy infrastructure by
  – conservation
  – investing in sustainable and clean energy where feasible, and
  – becoming energy independent

• The 2019 solar project meets these goals
2019 Solar Project Goals

• FSST was awarded a topic 2 grant project with DOE to deploy solar at 11 sites.
• These applications were selected from the entire spectrum of Tribal opportunities and selected for best effect with a ‘behind the meter’ approach.
• FSST maintenance will provide all installation services and NRES will provide training and technical support and facilitate wholesale purchases of solar materials.
• Local deployment of solar increases Tribal independence and keeps money on the reservation.
The Square

1. RV Park
2. Prairie Junction (Wotshawn)
3. FSST Office
4. Grace Moore
5. Counsel office
6. Old Medical
7. Community Center
8. New Clinic (Now Larger)
9. Eastman
10. Wellness
11. Pharms
Technical Factors

• Some ‘high’ electrical rates were discovered at several Tribal locations.
• Usage summaries have been examined for cost and consumption trend analysis
• System size estimates have been made based on policy, cost and site factors.
• System sizes could be increased in some cases, but should stay less than 40-50kw
• SD interconnection policy is very limiting, so proper system sizing is vital for proper economic return.
Technical Factors, cont.

• Climate (harsh winters and a lot of sun exposure)
• Site opportunities
  – Two locations are recommended for Casino
  – Nine locations are recommended for the Tribe
  – Some of the roofs are ‘solar ready’ with S-5
  – Still some additional locations in the ‘bullpen’
  – Pow Wow grounds excluded because of policy
  – Proposed systems are ‘right sized’ for the locations to eliminate excess energy delivered to grid, designed for retail offset.
Technical Factors, cont.

• Large users of Casino and Hotel were not considered at this time.
• Rates are high for small commercial sites.
• Larger cap for interconnection exists at Prairie Junction, 100kW. Excellent visibility from I-29.
• RV Park will provide excellent visibility and ‘green camping’
• Shade structure mountings provide dual purpose application and serve to integrate solar into the everyday tribal areas
Dual purpose shade structure
Integrating Solar into Human Space
## Annual Analysis

<table>
<thead>
<tr>
<th>Location</th>
<th>KW</th>
<th>Mwh/yr</th>
<th>Mwh/yr</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>RV Park</td>
<td>12</td>
<td>18</td>
<td>43MWh</td>
<td>Pole</td>
</tr>
<tr>
<td>Prairie Junction</td>
<td>60</td>
<td>88</td>
<td>218MWh</td>
<td>Ground</td>
</tr>
<tr>
<td>FSST Office</td>
<td>40</td>
<td>59</td>
<td>102MWh</td>
<td>S-5 Roof</td>
</tr>
<tr>
<td>Grace Moore</td>
<td>16</td>
<td>24</td>
<td>38MWh</td>
<td>Pole</td>
</tr>
<tr>
<td>Counsel Office</td>
<td>4</td>
<td>6</td>
<td>12MWh</td>
<td>Pole</td>
</tr>
<tr>
<td>Old Medical</td>
<td>16</td>
<td>24</td>
<td>37MWh</td>
<td>S-5 Roof</td>
</tr>
<tr>
<td>Community Ctr</td>
<td>40</td>
<td>59</td>
<td>365MWh</td>
<td>Ground</td>
</tr>
<tr>
<td>New Clinic</td>
<td>60</td>
<td>88</td>
<td>596MWh</td>
<td>Ground</td>
</tr>
<tr>
<td>Eastman</td>
<td>10</td>
<td>15</td>
<td>27MWh</td>
<td>Roof</td>
</tr>
<tr>
<td>Wellness +</td>
<td>20</td>
<td>30</td>
<td>34MWh</td>
<td>S-5 Roof</td>
</tr>
<tr>
<td>Pharms</td>
<td>40</td>
<td>59</td>
<td>91MWh</td>
<td>Ground</td>
</tr>
</tbody>
</table>

### Totals/Average

|                | 318 | 470  | 1563 MWh |

22-Apr-19
Ground Mount
Pole Mount
S-5 Roof
Administrative Factors

• FSST Maintenance Dept. is well-staffed with years of experience in various construction projects
• FSST has an in-house legal department
• FSST has a good relationship with its partners
  – City of Flandreau
  – Missouri River Energy Services
  – Sioux Valley Energy
  – Basin Electric Power Cooperative
  – Moody County (for building permits)
• Access to storage
Administrative Factors, cont.

• Access to professional services
  – NRES provides consulting
  – licensed electricians

• Effects of COVID-19 pandemic on project schedule

• Novelty project for this area
  – Some increased costs (and reduced profits) for partners
  – Delays
Closing remarks

• Looking for new energy opportunities
• Learning to think ahead about energy
• Paving the way for others’ solar projects