Community Solar Matters...
With Strong Design and Solar Plus Options

Jill K. Cliburn, Cliburn and Associates (for CSVP)
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• Led by Extensible Energy and cosponsored by US DOE SunShot. Jill Cliburn, Cliburn and Associates, as principal investigator.

• Demonstration and documentation of four ways to make utility-led community solar better:
  • strategic design
  • target marketing
  • procurement and pricing
  • solar-plus

• Utility participants, industry players, community partners

www.communitysolarvalueproject.com
CSS As Market-Based Laboratory

What you can do – and why

• Focus on collaboration with local/regional utilities, developers, participants, communities at large
• Design for diversity, flexibility, future
• Tapping the most affordable, appropriate technologies
• Often that means customer-side DR and storage…
• (But not necessarily at the same site/s as the solar)
• And capture the marketing synergy of solar ++
• DER integration supports goals for a clean, affordable, resilient, open, and forward-leaning energy industry
• It’s better to solve a problem near its source
DAILY POWER PRODUCTION
TRACKER COMPARED TO FIXED MOUNT

Illustration: Mark Montgomery
Duck!

Source: CA ISO, April 2017
PNM
Prosperity Energy Project
PNM experience w/ operational flexibility

Now, what can we achieve, based on price signals, forecasting, storage/DR on both sides of the meter?
Solar + Demand Response

Solar-Plus or Solar Triple Play Strategies defy mass-market research, which puts emphasis on the simplicity of the offer. However, particular market segments seem likely to find that the easy attraction of the solar opportunity makes the more difficult “pitch” for DR acceptable—even attractive!
Demand Response & EE
Water Heater As Battery

**Steele-Waseka Electric Co-op – Community Solar Plus**
S-W uses grid-interactive water heaters, which are controlled at the regional level by Great River Energy G&T. The CSS program provides a PV panel subscription at a low cost (410 W for $170) with an option to obtain a new controlled water heater at no cost.

**Solar Holler “Mine the Sun” – Community Solar Plus**
Solar Holler a W. Va. non-profit, sites small community solar projects on local churches and non-profits, and organizes participants for a companion program, allowing Maryland-based Mosaic Power to control their water heaters. The DR resource is aggregated and sold into the PJM. The DR benefits are used to pay off shares of the solar project.

**Solar Plus PowerWall + Thermostat + Water Heater Storage –**
SolarCity product for Hawaiian CSG program; all-in $0.26/kWh lease
More Batteries!
Green Mountain Power: Personal Powerwall Option

- Vermont: 75% RPS By 2032
- Pilot: Tesla Powerwall batteries for 500 customers
- Lease payments: $85/mo or $35/mo
- $50/mo subsidy IF utility may control battery
- CEO Claims: already deriving benefits > $50/mo.
- GMP is not co-marketing w/ solar (yet?)
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<th>Integration Issue</th>
<th>&quot;Duck Curve&quot; Issues</th>
<th>Intra Hour Fast Ramps</th>
<th>X&gt;2-Hour Forecast Error</th>
<th>X&gt;24-Hour Forecast Error</th>
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**CSVP: Guidance On Solar Plus DR & Storage**
Local Solar and Solar-Plus Today

- Community solar and storage outlook: *ecstatic*
- Better design and DR adds another perspective: *pragmatic*
- Co-marketing makes sense
  - *From the customer’s perspective*
  - *From the utility perspective*
  - *From the grid perspective*
The Presenter and the Project

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The **Community Solar Value Project** led by Extensible Energy, Lafayette, CA, with support from Cliburn and Associates, Navigant, Olivine and Millennium Energy. See more at www.CommunitySolarValueProject.com