

SolarCity

Providing Value through Distributed Energy Resources
and Infrastructure-as-a-Service

April 2016

Agenda

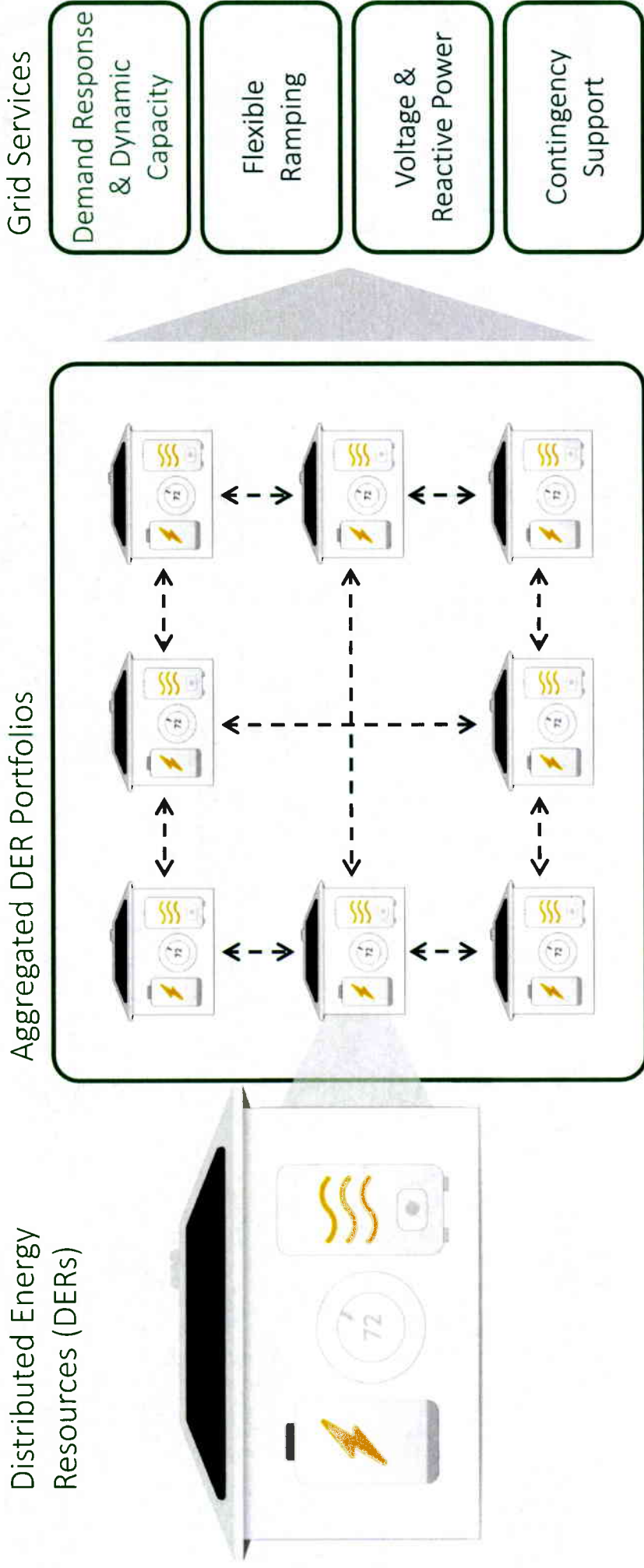
1. Distributed Energy Resources (DERs) can provide significant value to the grid, customers, and society.
2. Technology to unlock many of the values of DERs is ready.
3. Regulatory and utility reforms can enable *Infrastructure-as-a-Service* to deliver DER values.

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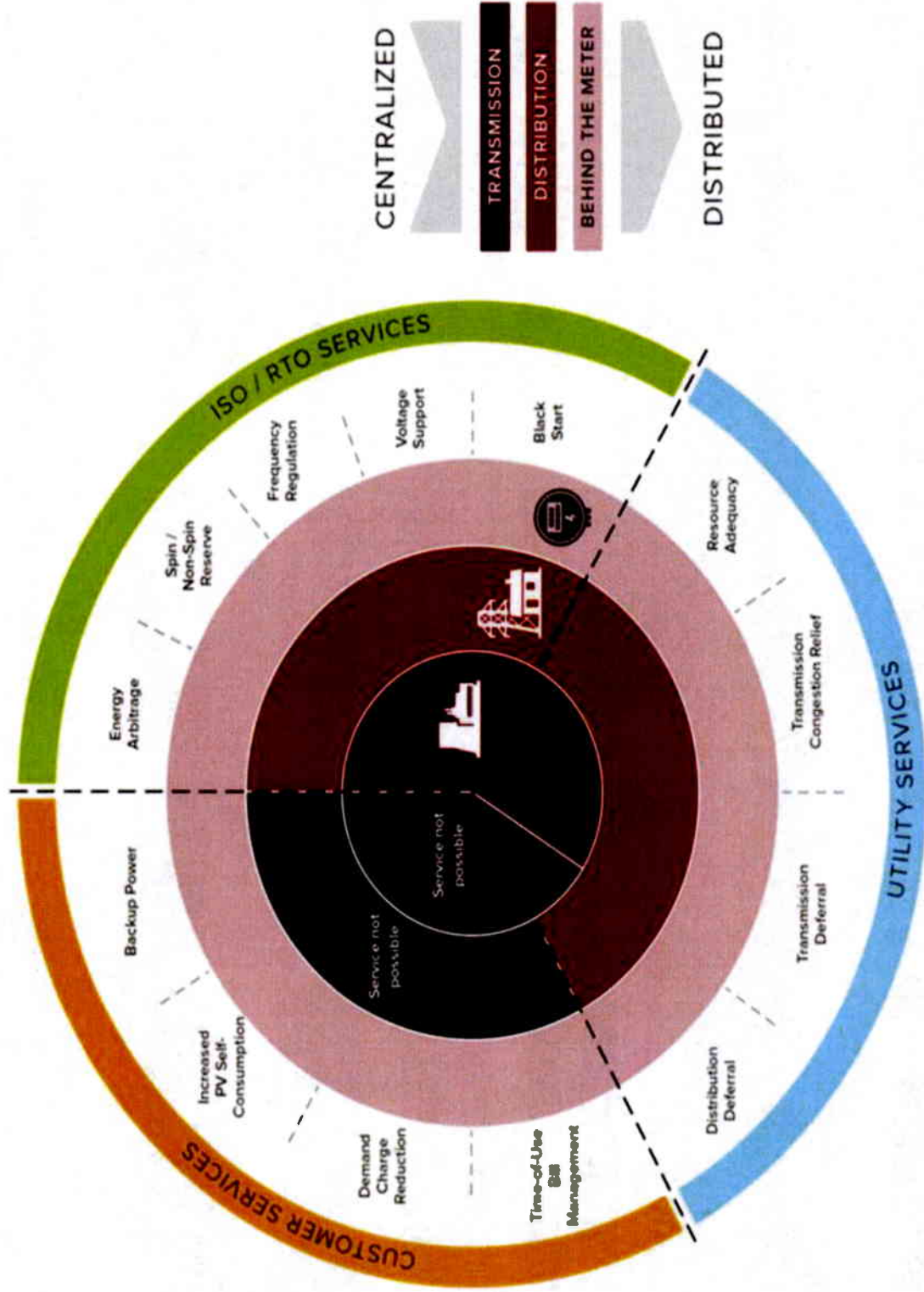
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Distributed Energy Resource Aggregation

Utilize portfolios of distributed energy resources to provide grid services

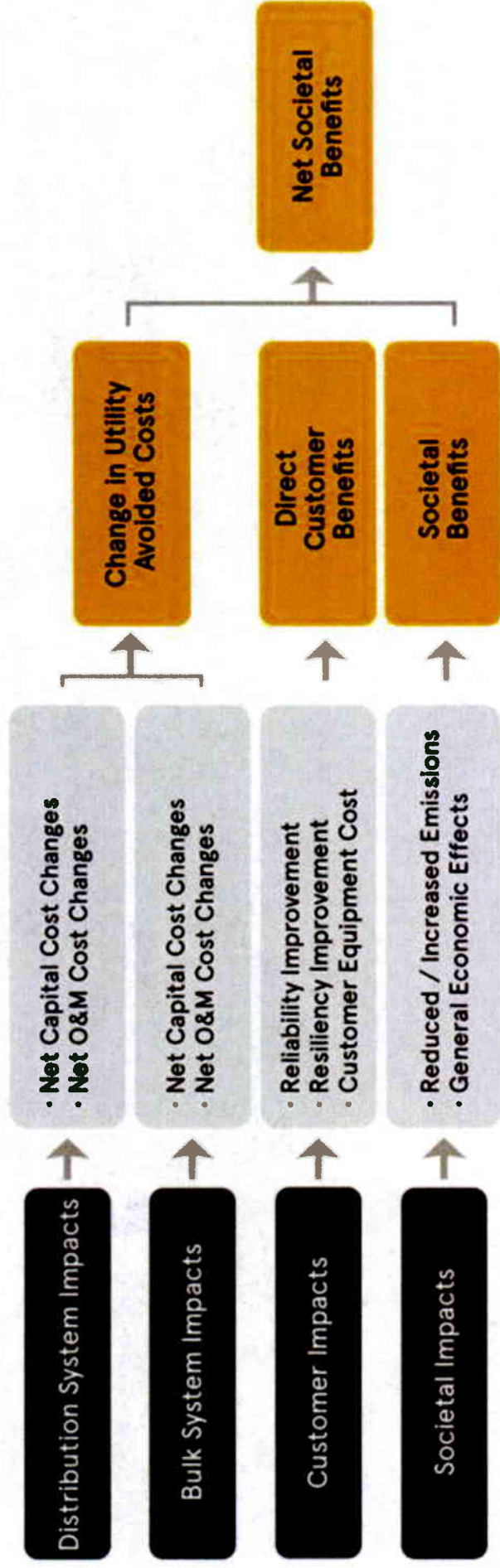


DER portfolios can provide at least 13 services to 3 stakeholder groups

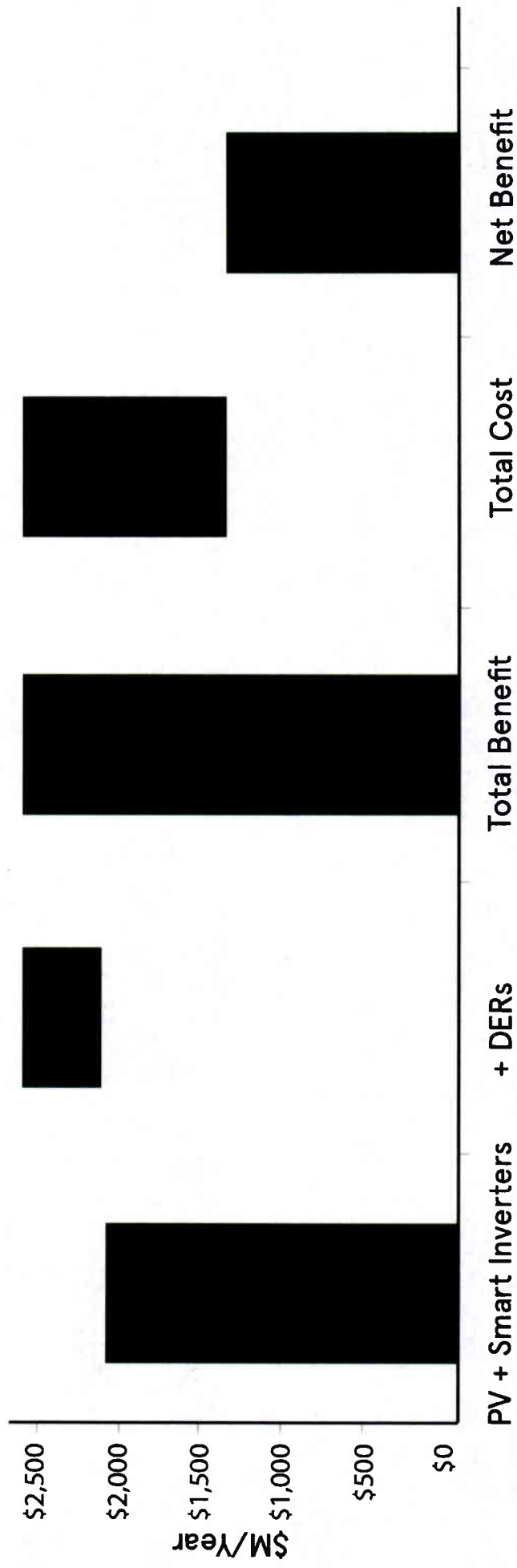


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A framework for valuing DERs



Example analysis: DERs could provide over \$1.4 billion in annual societal benefits to California by 2020



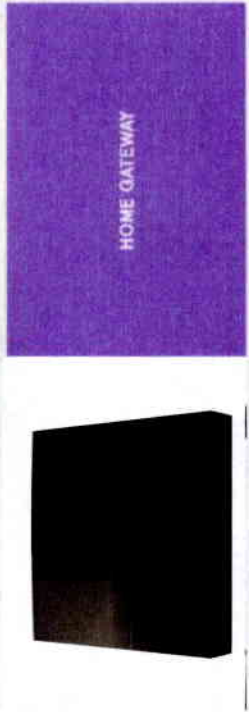
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Residential and Commercial DERs are already being commercially deployed for customer benefits.



Solar panels capture energy from the sun and convert it to electricity to power your home.



The gateway allocates energy to maximize self-supply.



The thermostat learns what temperature you like and builds a schedule around yours.



The battery stores your excess solar energy production for later use.

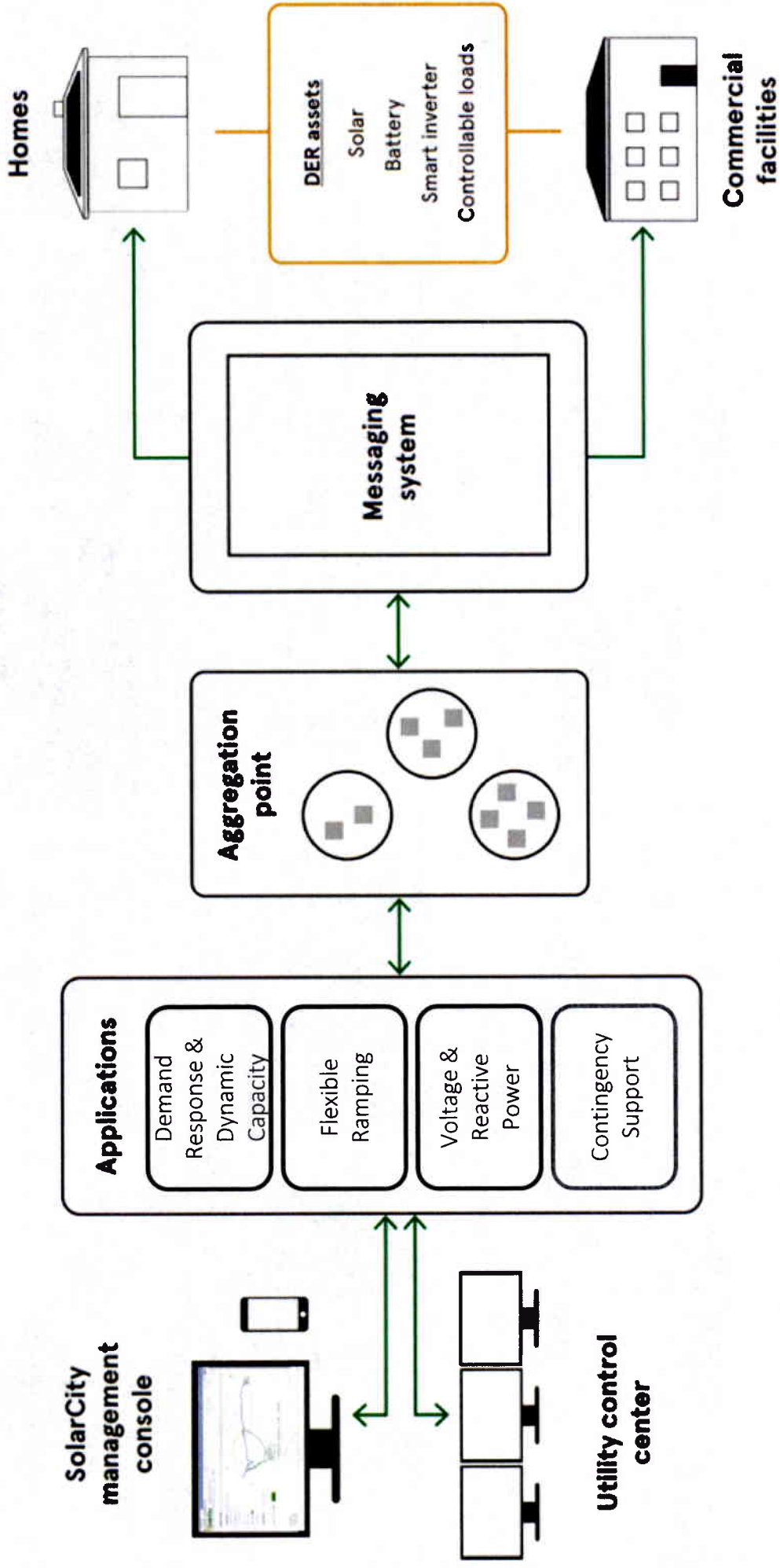


See how much energy you're importing from the grid compared to how much is being self-supplied.



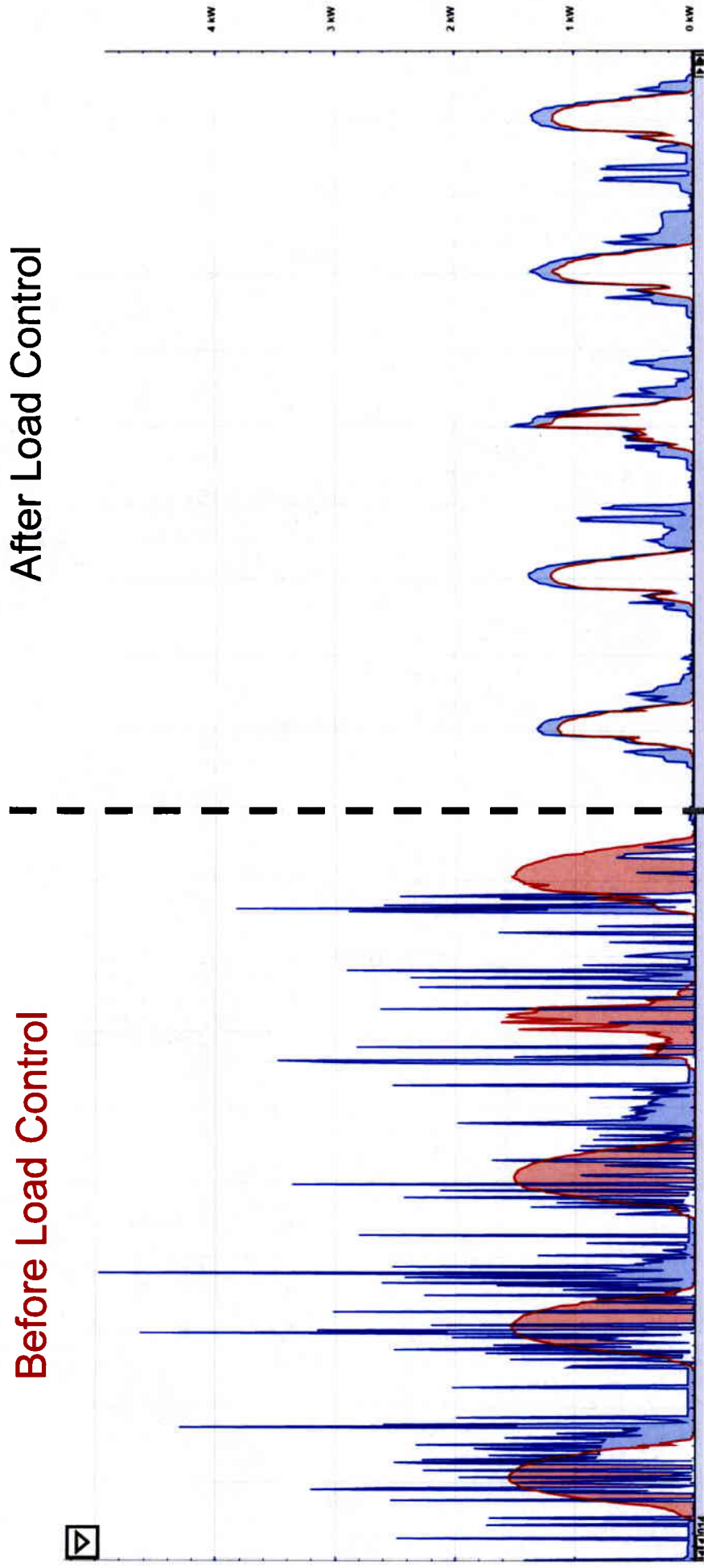
This uses excess solar production to heat hot water for your home.

Existing DER monitoring and control platforms enable grid benefits.



Field Results: Dynamic Load Control

22 electric water heaters deployed to absorb PV output



PV production is always lower than gross load, ensuring no net export beyond point of common coupling