DOCKETED	
Docket Number:	19-IEPR-06
Project Title:	Energy Efficiency and Building Decarbonization
TN #:	229538-14
Document Title:	Time to Reconcile
Description:	Presentation by Carmen Best, Recurve Analytics
Filer:	Raquel Kravitz
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	8/26/2019 10:46:46 AM
Docketed Date:	8/26/2019

Carmen Best, Director of Policy & Emerging Markets

August 27, 2019
IEPR Joint Commission Meeting

California has constructed a crazy quilt of policies:

Time to Reconcile

Source:https://www.carnegiearts.org/wp-content/uploads/2018/11/exhibit_geesbend.jpg

Solution:

- Common Valuation
- Targeting & Performance
- Building Bridges with Data Infrastructure

RECURVE

COMMON VALUATION

Current Barriers

RECURVE

Common Valuation

D.19-05-019 (5/16/2019) Decision Adopting ***Cost-Effectiveness*** *Analysis Framework Policies for All Distributed Energy Resources*

Valuation of DER (VDER) compensates projects based on ***when and where*** *they provide electricity to the grid*

"Value Stack"

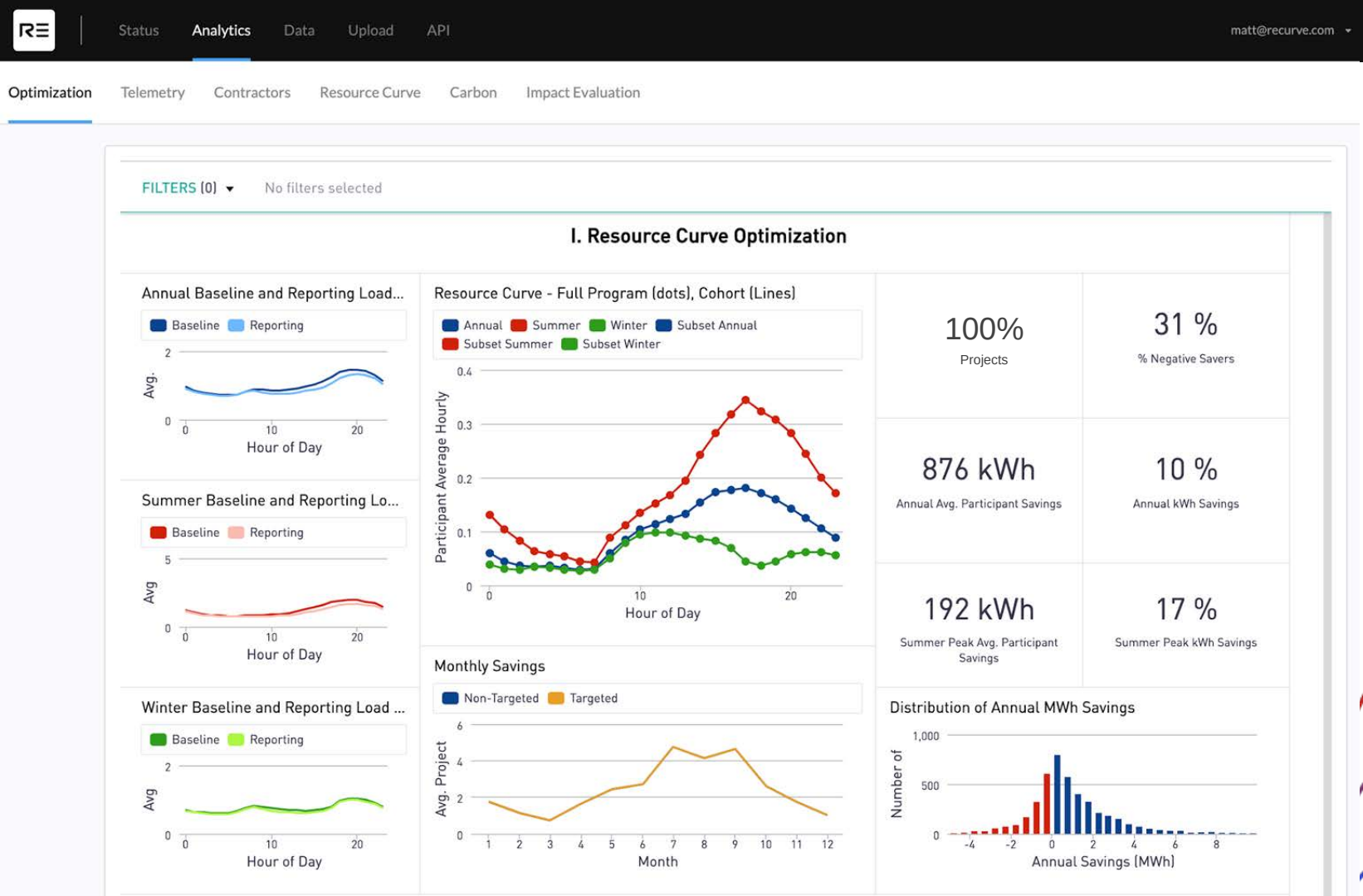
?

Procurement and auction mechanisms based on ***Marginal Cost of Carbon*** *and performance accountability*

TARGETING & PERFORMANCE

There should be no such thing as a non-cost effective program

RECURVE



Electric Resource Curve

Residential HVAC and Shell

Status | Analytics | Data | Upload | API | matt@recurv

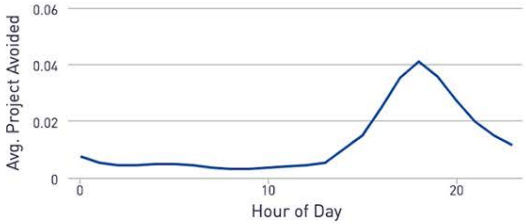
Optimization | Telemetry | Contractors | Resource Curve | Carbon | Impact Evaluation

FILTERS (0) ▾ No filters selected

II. Portfolio Avoided Cost and GHG

Average Project Electric Utility Avoided Costs

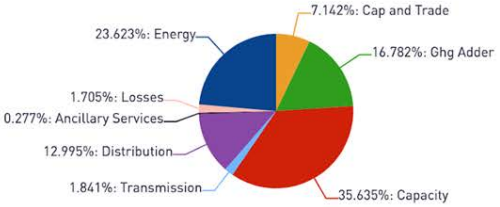
Marginal GHG Analysis



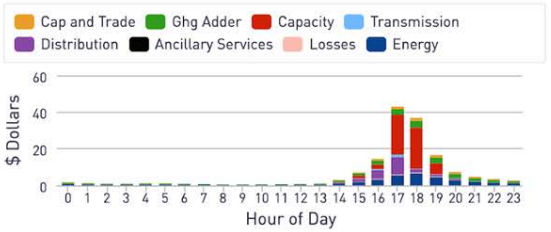
.298 Tons
Avg. Project Annual GHG Savings From Electricity

.34 Tons/MWh
$ Avoided GHG per MWh Savings

Avoided Cost Profile (Positive Only)



Average Project Annual Electric Utility Avoided Costs



$152.66
Avg. Project Annual Electric Utility Avoided Costs

$ .17/kWh
$ Avoided Cost per kWh Savings

Electric Avoided Cost

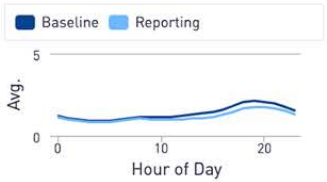
Residential HVAC and Shell

50% of Projects

FILTERS (1) 3_Summer_Peak_kWh Top Half

I. Resource Curve Optimization

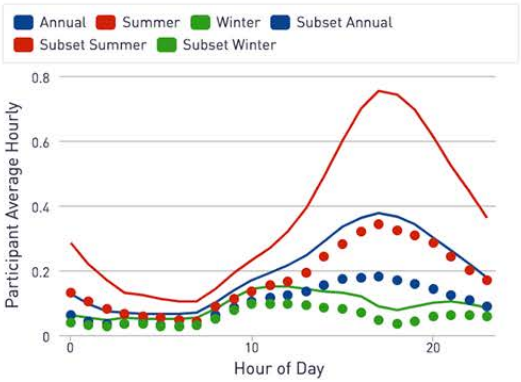
Annual Baseline and Reporting Load...



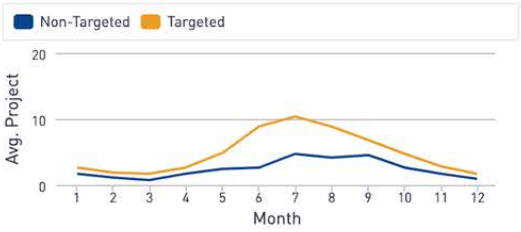
Summer Baseline and Reporting Lo...

Winter Baseline and Reporting Load ...

Resource Curve - Full Program (dots), Cohort (Lines)



Monthly Savings



50% Projects	18 % % Negative Savers
1,723 kWh Annual Avg. Participant Savings	14 % Annual kWh Savings
428 kWh Summer Peak Avg. Participant Savings	24 % Summer Peak kWh Savings

Distribution of Annual MWh Savings

40% Fewer Negatives

40% More Peak Summer

Status | Analytics | Data | Upload | API — matt@recurve.com

Optimization | Telemetry | Contractors | Resource Curve | Carbon | Impact Evaluation

FILTERS (1) ▾ 3_Summer_Peak_kWh Top Half

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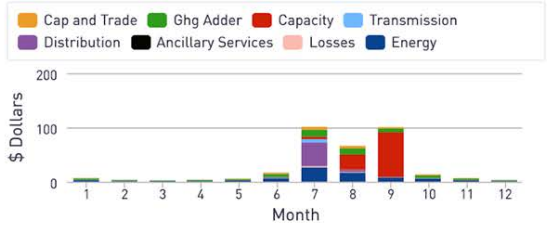
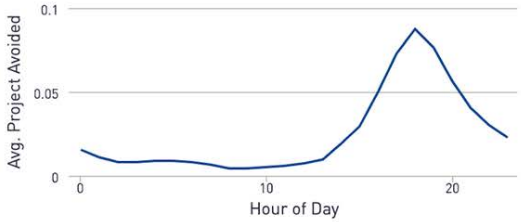
Average Project Electric Utility Avoided Costs



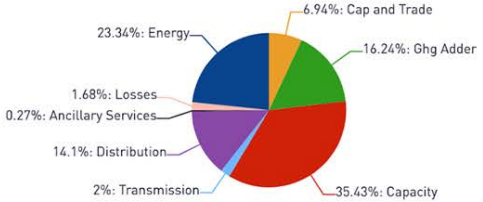
Marginal GHG Analysis



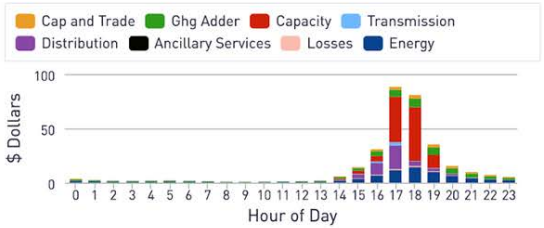
.598 Tons
Avg. Project Annual GHG Savings From Electricity

.35 Tons/MWh
$ Avoided GHG per MWh Savings

Avoided Cost Profile (Positive Only)



Average Project Annual Electric Utility Avoided Costs



$317.24
Avg. Project Annual Electric Utility Avoided Costs

$ .18/kWh
$ Avoided Cost per kWh Savings

50% of Projects

2x Avoided GhGs

2x Avoided Cost

10% of Projects

FILTERS (2) 3_Summer_Peak_kWh Top 10% 5_Summer_Shoulder_Ratio Top 10%

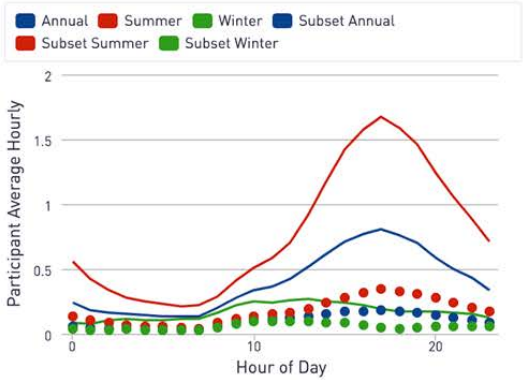
I. Resource Curve Optimization

Annual Baseline and Reporting Load...

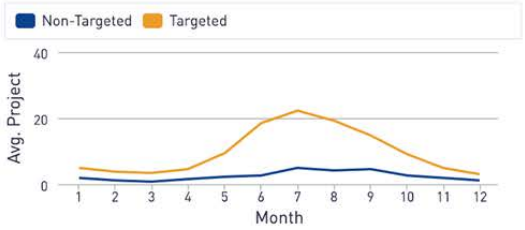
Summer Baseline and Reporting Lo...

Winter Baseline and Reporting Load ...

Resource Curve - Full Program (dots), Cohort (Lines)



Monthly Savings



10% Projects	8 % % Negative Savers
3,516 kWh Annual Avg. Participant Savings	20 % Annual kWh Savings
921 kWh Summer Peak Avg. Participant Savings	32 % Summer Peak kWh Savings

Distribution of Annual MWh Savings

75% Fewer Negatives

2x Peak kWh Summer

Status | Analytics | Data | Upload | API — matt@recurve.com

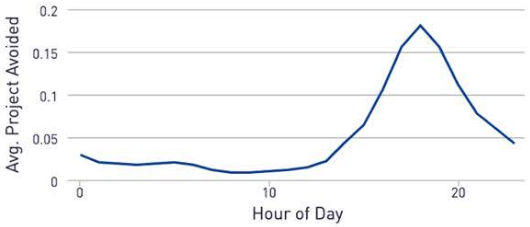
Optimization | Telemetry | Contractors | Resource Curve | Carbon | Impact Evaluation

FILTERS (2) ▾ 3_Summer_Peak_kWh Top 10% 5_Summer_Shoulder_Ratio Top 10%

II. Portfolio Avoided Cost and GHG

Average Project Electric Utility Avoided Costs

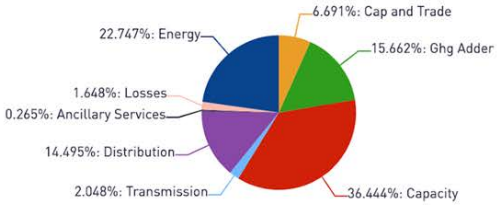
Marginal GHG Analysis



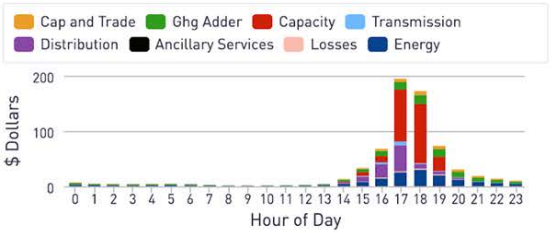
1.234 Tons
Avg. Project Annual GHG Savings From Electricity

.35 Tons/MWh
$ Avoided GHG per MWh Savings

Avoided Cost Profile (Positive Only)



Average Project Annual Electric Utility Avoided Costs



$678.93
Avg. Project Annual Electric Utility Avoided Costs

$ .19/kWh
$ Avoided Cost per kWh Savings

10% of Projects

4x Avoided GhGs

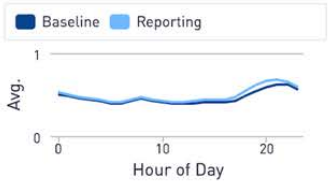
4.5x Avoided Cost

25% of Projects

FILTERS (1) 3_Summer_Peak_kWh Bottom Quartile

I. Resource Curve Optimization

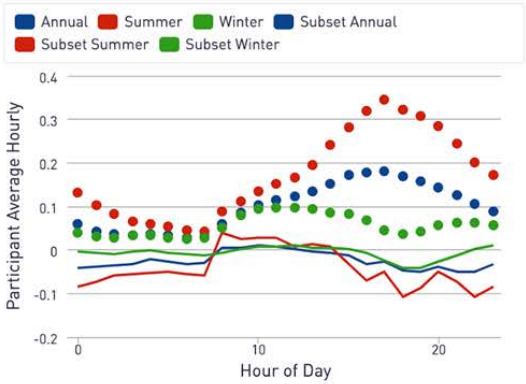
Annual Baseline and Reporting Load...



Summer Baseline and Reporting Lo...

Winter Baseline and Reporting Load ...

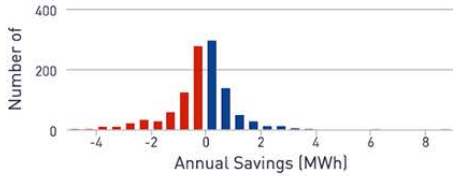
Resource Curve - Full Program (dots), Cohort (Lines)



Monthly Savings

25% Projects	51 % % Negative Savers
-205 kWh Annual Avg. Participant Savings	-5 % Annual kWh Savings
-45 kWh Summer Peak Avg. Participant Savings	-18 % Summer Peak kWh Savings

Distribution of Annual MWh Savings



51% Negative

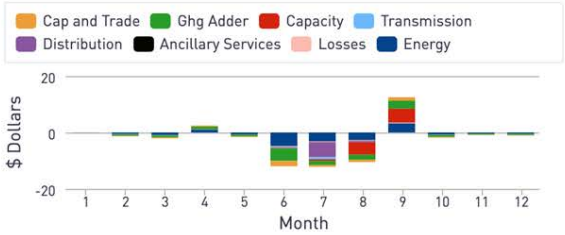
Energy Use Increases

25% of Projects

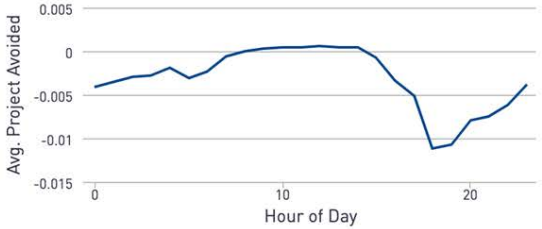
FILTERS (1) 3_Summer_Peak_kWh Bottom Quartile

II. Portfolio Avoided Cost and GHG

Average Project Electric Utility Avoided Costs



Marginal GHG Analysis



-.076 Tons

Avg. Project Annual GHG Savings From Electricity

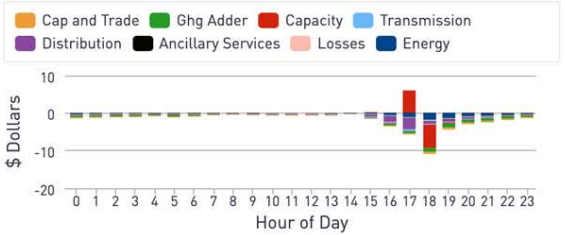
-.37 Tons/MWh

$ Avoided GHG per MWh Savings

Avoided Cost Profile (Positive Only)

Query returned no matching rows.

Average Project Annual Electric Utility Avoided Costs



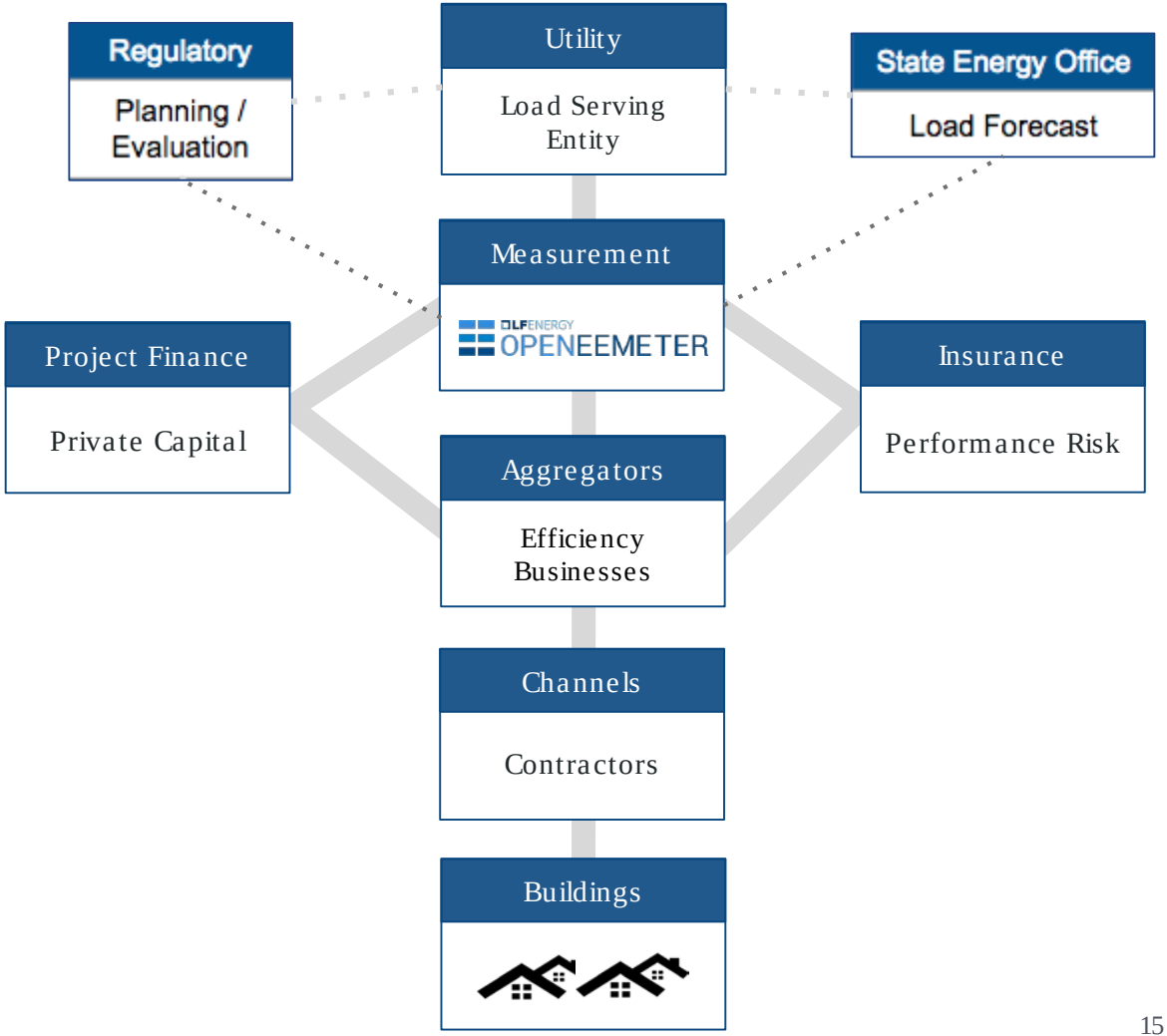
-$26.86

Avg. Project Annual Electric Utility Avoided Costs

$ -.13/kWh

$ Avoided Cost per kWh Savings

Performance Accountability



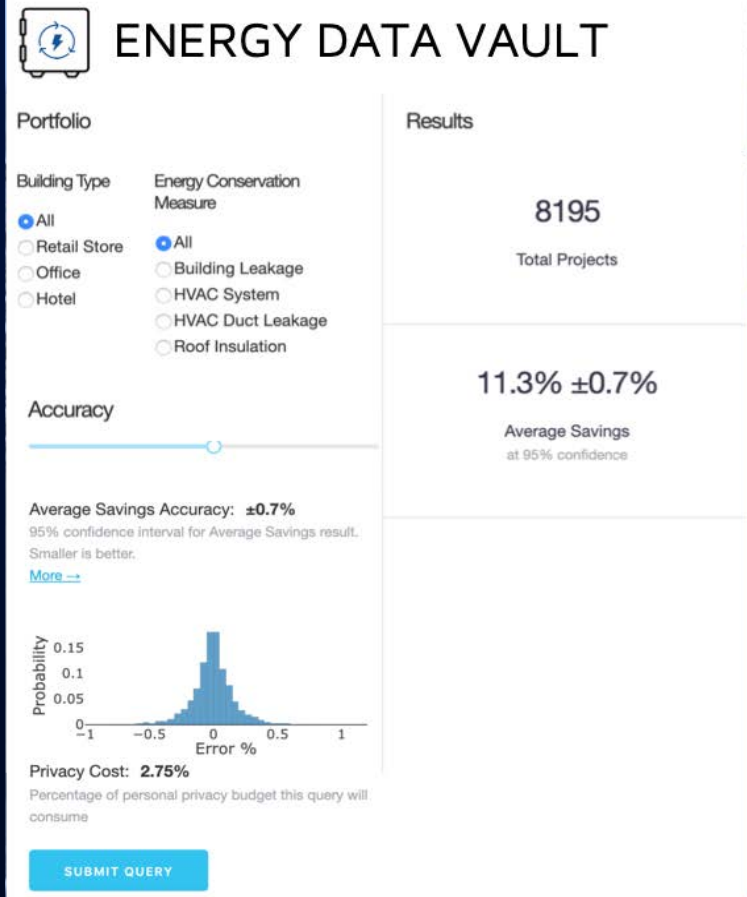
BUILDING BRIDGES

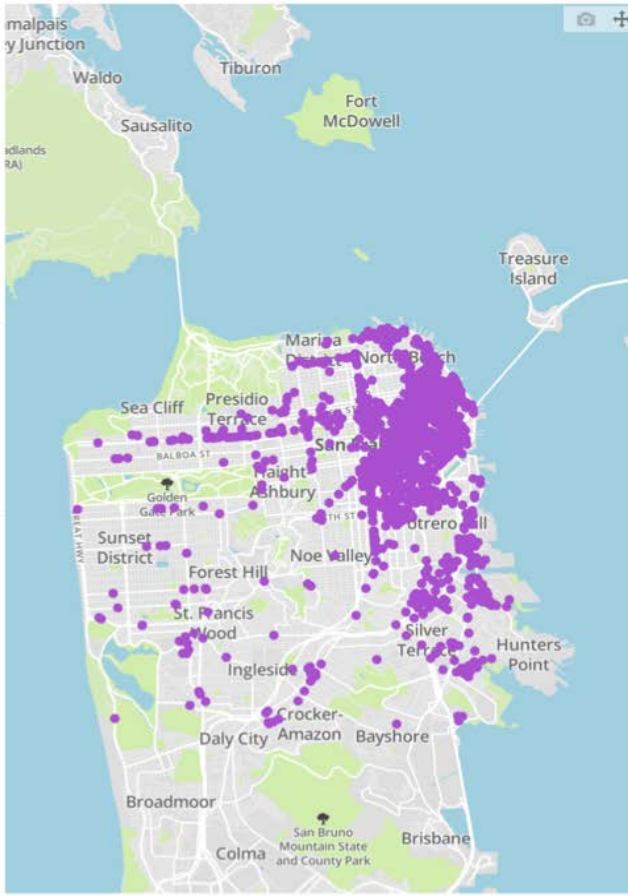
DATA ACCESS AND TRANSFER

RECURVE

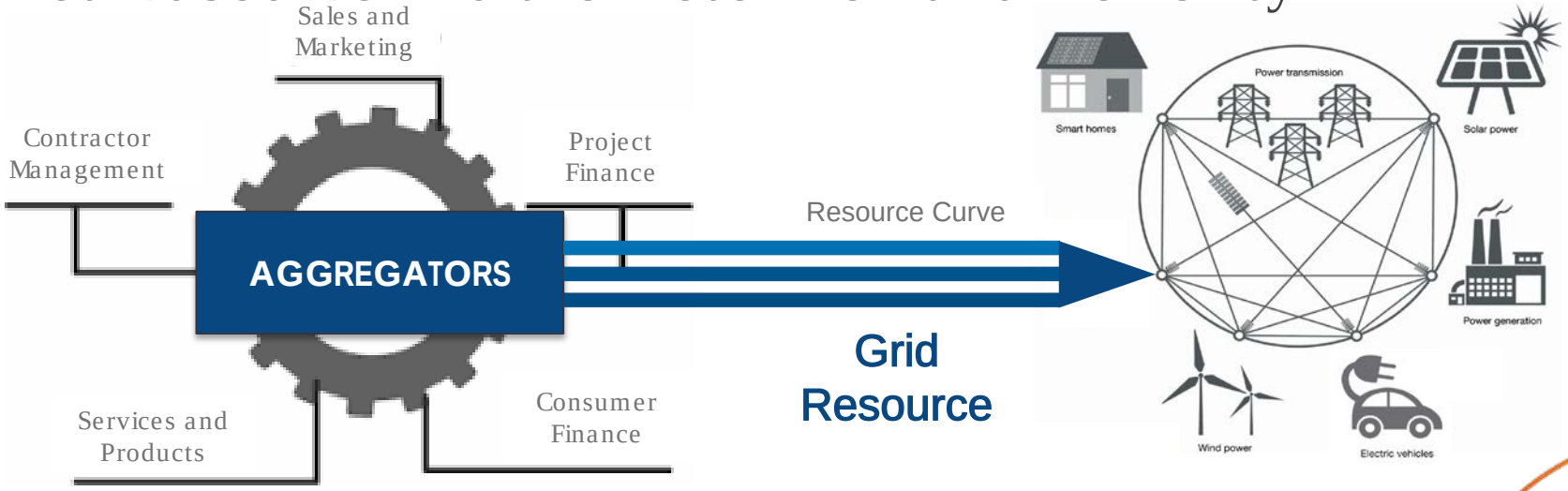
Bridge the Gap

- Data access
- Processes for secure sharing
- Transparency to support common valuation





Market-Based Behind the Meter Demand Flexibility



Business Models

Savings Comfort Health

Questions?

Carmen Best
carmen@recurve.com

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