APS RPAC Meeting

3/23/2022

MEETING AGENDA

Welcome & Meeting Agenda
Matt Lind
1898 & Co.

RFP Review Process
Matt Lind
1898 & Co.

All-Source RFP Industry Trends
Lakshmi Alagappan
E3

RFP Evaluation Process
Matt Lind
1898 & Co.

APS Customer Programs
Daniel Haughton
Director, Customer to Grid Solutions

2020 ASRFP Update
Jill Freret
Director, Resource Acquisition

Discussion & Next Steps
Matt Lind
1898 & Co.

February RPAC Meeting

- E3's Southwest Resource Adequacy Study determined that utilities in the Southwest have adequate resource additions in their resource plans to meet electricity demand through 2033. Meeting resource adequacy needs is contingent on historical resource procurement rates that emphasize the need to move quickly and efficiently on resource procurement.
- APS resource needs through 2027 are driven by load growth, resource retirements, and contract roll offs. The specific size of the need will be finalized once the negotiation of contracts from the 2020 RFP is complete.
- APS will provide a draft RFP document and evaluation criteria that targets resource needs between 2025 and 2027. RPAC members will be encouraged to provide feedback on RFP language and bid evaluation criteria.

Following Up

- Action Items from previous meetings:
  - RFP Survey updated and emailed for feedback
  - Provide example of RFP scoring criteria and weightings
  - Complete introduction calls
- Ongoing Commitments:
  - Distribute meeting materials in a timely advance fashion (3 bd prior)
  - Transparency and dialogue

Meeting Guidelines

- RPAC Member engagement is critical. Clarifying questions are welcome at any time. There will be discussion time allotted to each presentation/agenda item, as well as at the end of each meeting.
- We will keep a parking lot for items to be addressed at later meetings.
- Meeting minutes will be posted to the public website along with pending questions and items needing follow up. We will monitor and address questions in a timely fashion.
- Consistent member attendance encouraged; identify proxy attendee for scheduling conflicts.
- Meetings and content are preliminary in nature, and prepared for RPAC discussion purposes. Litigating attorneys are not expected to participate.
- **Today**: Certain RPAC Members are excused from entirety of today's meeting due to potential resource development interests.

RFP Review Process

After receiving the Draft RFP document… What next?

- **DO NOT** share document
- RFP document includes:
  - Overview
  - Process and Schedule
  - Eligibility Requirements
  - Evaluation Process
  - Miscellaneous Information
- Example topics for feedback
  - Schedule
  - Participation requirements (size, etc.)
  - Evaluation (process and criteria)

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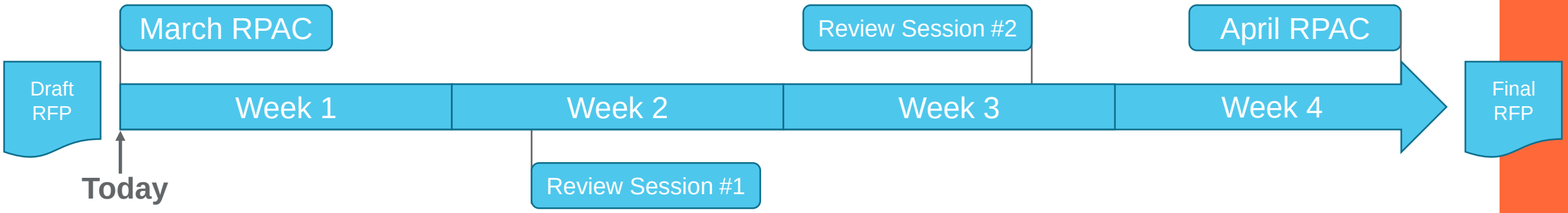
RPAC RFP Feedback Timeline



- **March 23rd**: Today
- March 25th: Volunteer[1]! Final day to register for detailed RFP review subgroup
- April 1st: First working group RFP review session
- April 11th: Second working group RFP review session
- April 15th: Finalize feedback prior to April RPAC Meeting
- April 20th: April RPAC Meeting
- Late April/Early May: RFP Release

[1]Please e-mail RPAC@aps.com with your interest.

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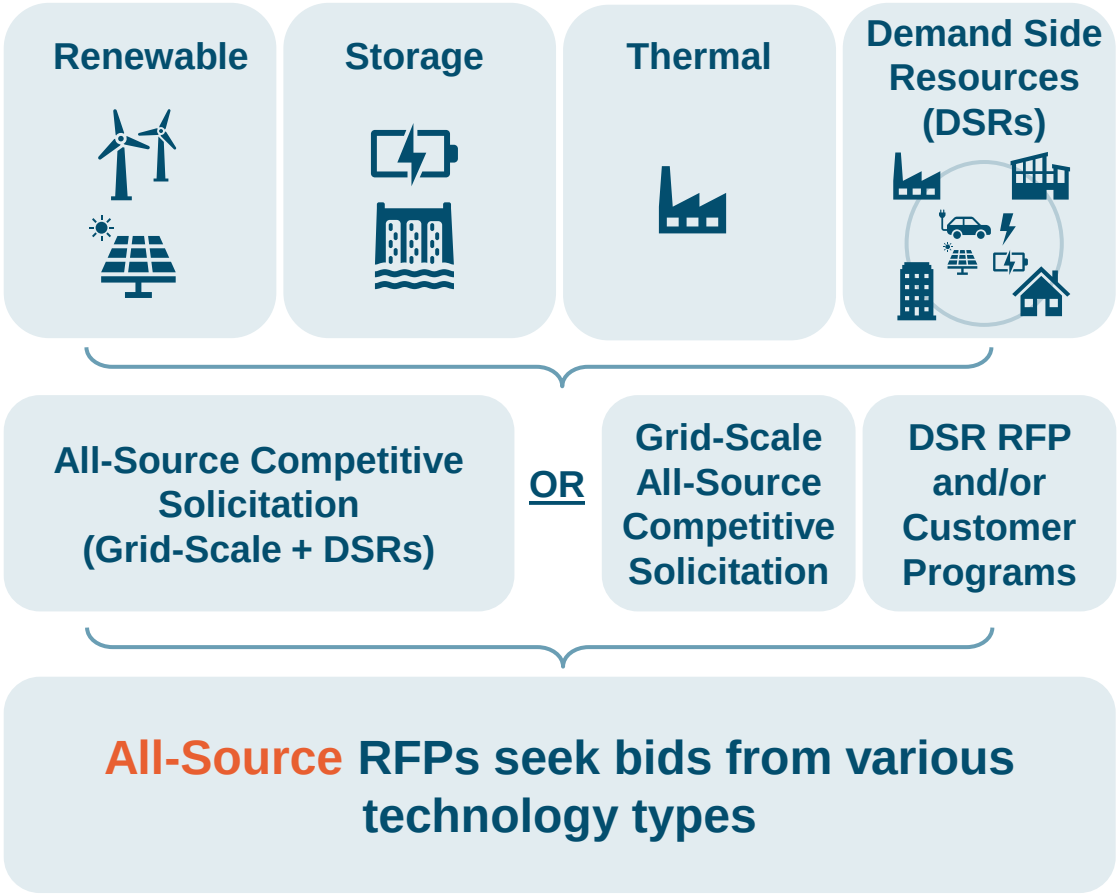
All-Source RFP Industry Trends

All-Source RFPs Allow a Broad Range of Resources to Compete to Fill a Need

All-Source RFP Process



Limited-Resource RFP Process

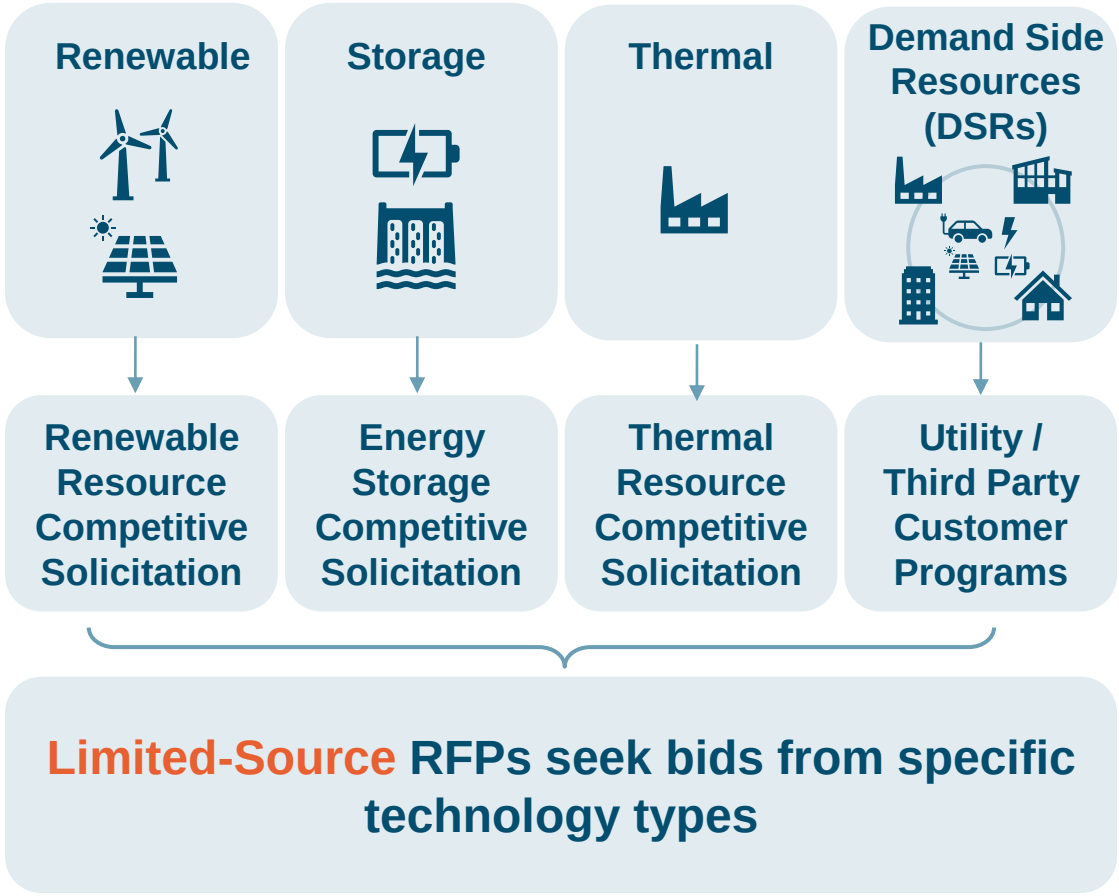
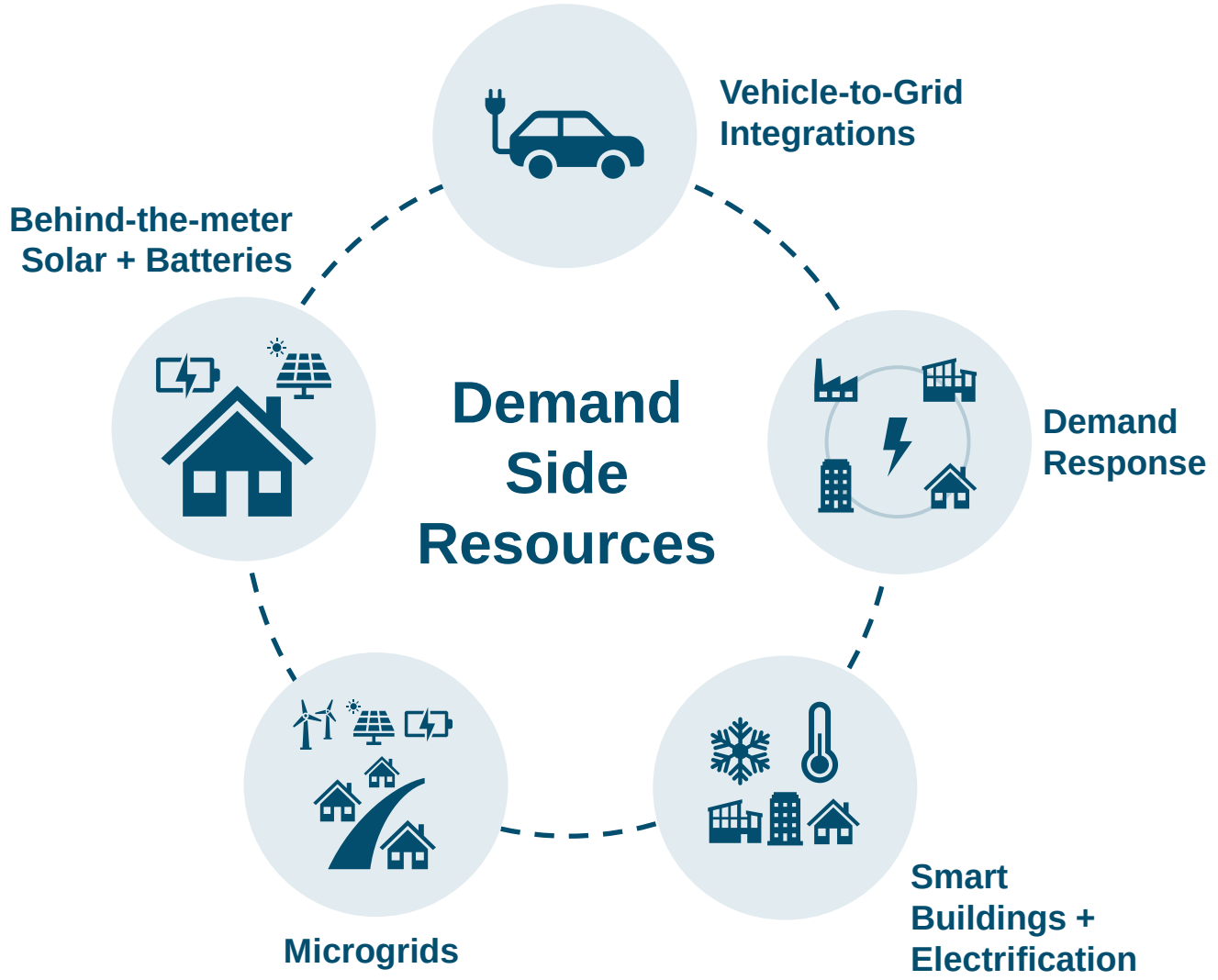


Figure adapted from *All-Source Competitive Solicitations: State and Electric Utility Practices* (LBNL, 2021)

All-Source RFPs often have DSR sub-procurements

+ To procure demand side resources (DSRs), utilities often carve out a separate DSR RFP alongside a grid-scale all-source RFP or develop a set of customer programs to fill a portion of the specified need



All-Source RFP Process

15-30 days	7-30 days	7-60 days	15-200 days	14-300 Days
Utility Develops and Issues RFP	**Bidder Submits Questions**	**Bidder Submit Proposals**	**Utility Evaluates Proposals**	**Utilities Execute Contracts**
Utilities establish rules, guidance, and criteria for RFPs to solicit competitive bids to meet an identified need	During this period, bidders submit clarifying questions to tailor bids	Bidders submit proposals and utilities evaluate bids based on relative costs, benefits, and other factors to identify a winning bid	Evaluation times vary the most due to different evaluation approaches. Some require multiple rounds of evaluations, some seek pre-approval from their regulating body, and some have interim Q&A sessions.	After negotiations, utilities will execute contracts and seek regulatory approval where necessary.

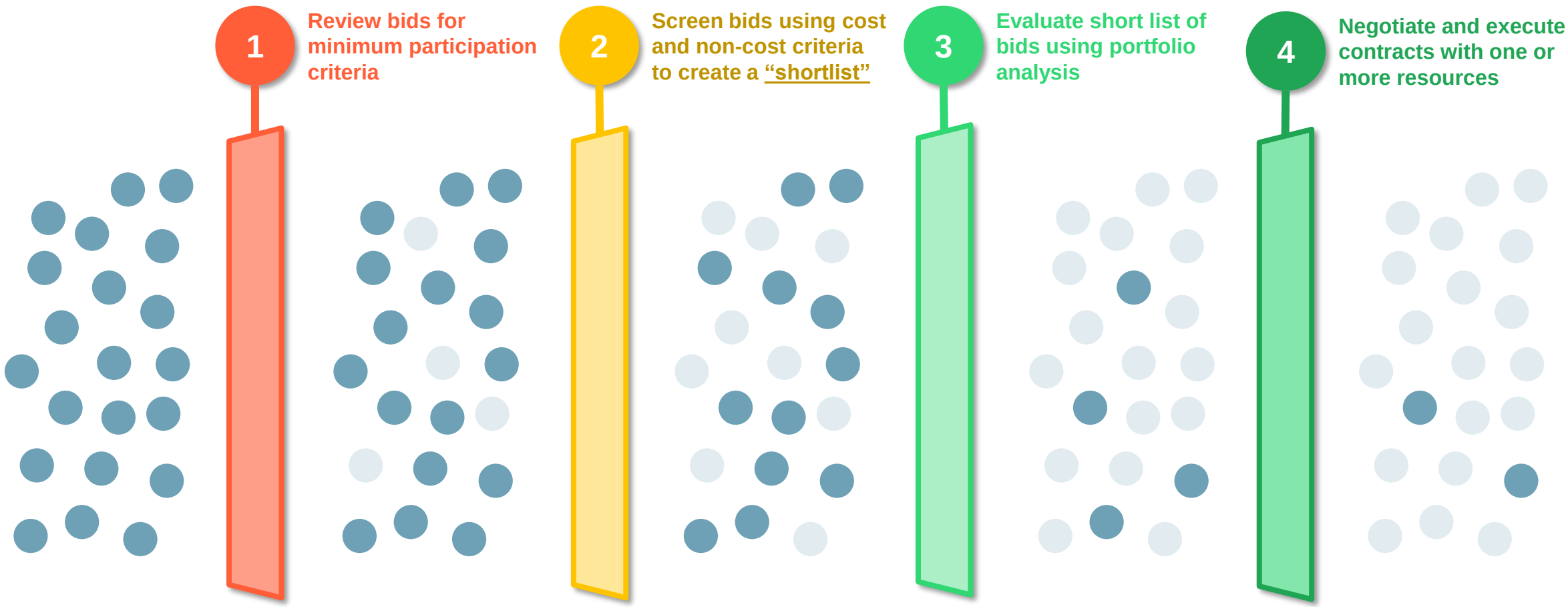
Schedules derived from E3's review of all-source RFPs listed in slide 4

All-Source RFPs Reviewed

- **E3 performed a review of several all-source RFPs to benchmark key RFP elements, including participation and evaluation criteria, to inform APS' development of its own all-source RFP**
- **E3 reviewed 15 recent all-source RFPs that varied in:**
  - Year issued
  - Amount of need
  - Type of need
  - Eligible resources
  - Geography

RFP	Year	Capacity Needed (MW)	Eligible Resources	Products Requested
Xcel, CO	2017	1,100	Solar, Wind, Natural Gas	Capacity, Clean Energy
El Paso Electric (TX, NM)	2017	370	Solar, Storage, Natural Gas	Capacity
NIPSCO, IN	2018	1,485	Solar, Wind, Storage, DSRs	Capacity
Western Farmers Electric Coop, OK	2019	100	All technologies	Capacity
Hawaii Electric Company, HI	2019	300-400	Zero-carbon, Storage, DSRs	Capacity, Clean Energy
AES Indiana, IN	2019	200	Solar, Wind, DSRs	Capacity
Vectren, IN	2020	700	Solar, Wind, Storage, Gas, EE	Capacity, Clean Energy
Pacificorp (Pacific NW)	2020	1,110	All technologies	Capacity
PG&E, CA	2021	2,801	Zero-carbon, Storage, DSRs	Capacity, Clean Energy
Portland General Electric, OR	2021	375	All technologies	Capacity, Clean Energy
Puget Sound Energy, WA	2021	1,506	All technologies	Capacity, Clean Energy
SDG&E, CA	2021	439	Zero-carbon, Storage, DSRs	Capacity, Clean Energy
El Paso Electric, NM	2021	335	Renewable, Storage DSRs	Capacity
Salt River Project, AZ	2021	1,000	All technologies	Capacity
Pacificorp (Pacific NW)	2022	900	Solar, Wind, Storage	Capacity

Evaluation process includes multiple steps



Evaluation process narrows the pool of prospective bidders through a number of steps, culminating with contract negotiations and execution

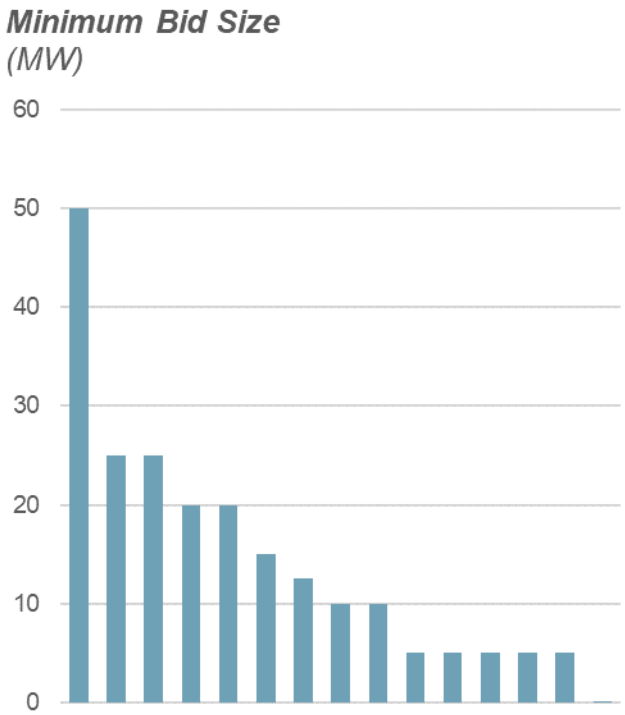
Step 1. Review bids for minimum participation criteria

Participation Criteria Comparison

RFP	Year	Capacity Needed (MW)	Eligible Resources	Minimum Bid Size (MW)	Minimum Contract Length (yrs)	Bid Fee ($/application)	COD years after RFP
Xcel, CO	2017	1,100	Solar, Wind, Gas	0.1	1+	$ 375-10,000	3-5
El Paso Electric, TX	2017	370	Solar, Storage, Gas	5	20+	$ 2,500	5-6
NIPSCO, IN	2018	1,485	Solar, Wind, Storage, DSRs	15	10+	$ 5,000	4
AES Indiana	2019	200	Solar, Wind, DSRs	5	10+	$ 5,000	6
Nevada Energy	2019	600	All technologies	25+	15 or 25	$ 10,000	4
Vectren, IN	2020	700	Solar, Wind, Storage, Gas, EE	12.5 for storage 50 for renewables	12+	$ 5,000	3-4
Pacificorp (Pacific NW)	2020	1,110	All technologies	20	15+	$10,000*	3-4
PG&E	2021	2,801	Zero-carbon, Storage, DSRs	10	10+	N/A	2-5
Portland General Electric, OR	2021	375	All technologies	10	10+	$ 10,000	4
Puget Sound Energy, WA	2021	1,506	All technologies	5	5+	$ 2,500-10,000	4
SDG&E	2021	439	Zero-carbon, Storage, DSRs	5	10+	N/A**	2-5
El Paso Electric (TX, NM)	2021	100	Renewable, Storage DSRs	5	1+	$ 2,500	4
Salt River Project, AZ	2021	1,000	All technologies	25	5+	$ 10,000	3-5
Pacificorp (Pacific NW)	2022	900	Solar, Wind, Storage	20	15+	$ 5,000-15,000	4

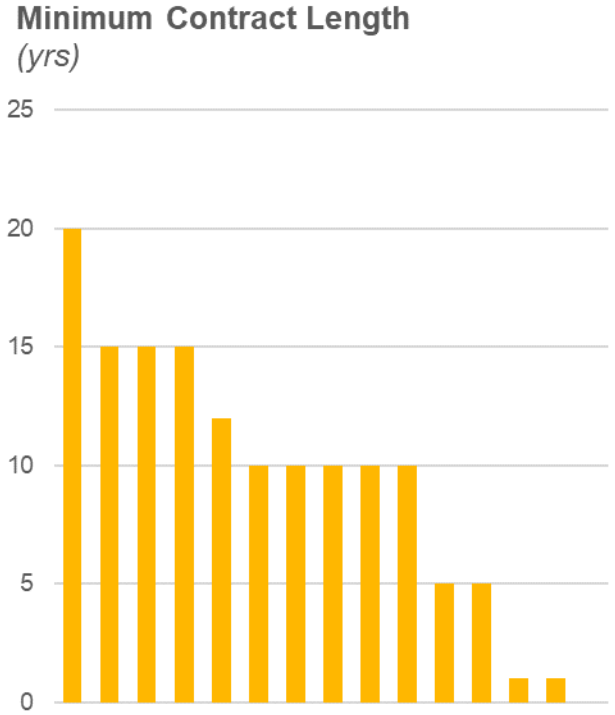
*Pacificorp 2020 offers bidders up to 3 alternatives for the same project at $3,000/alternative
**SDG&E does not have a bid fee but a shortlist acceptance fee; greater of $100,000 or $2/kW is the shortlist acceptance fee

Participation Criteria Comparison



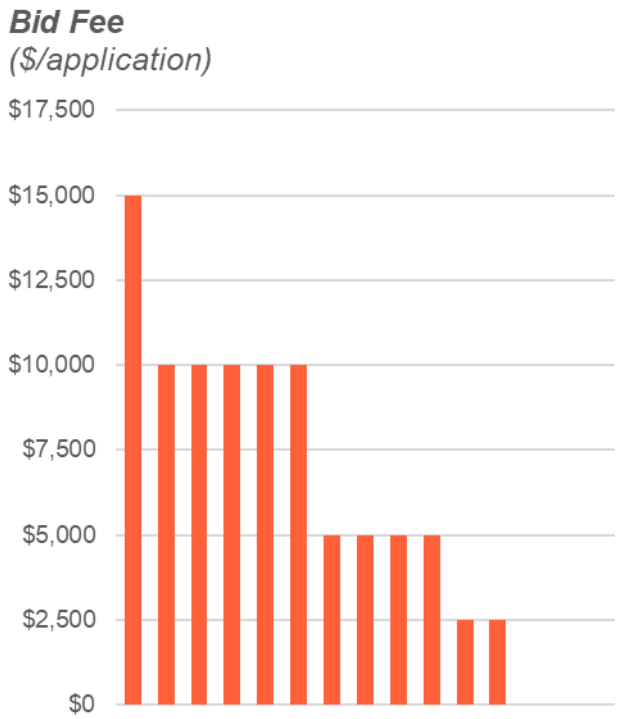
5-20 MW minimum bids

Minimum sizes typically ranged from 5-20MW in the RFPs reviewed



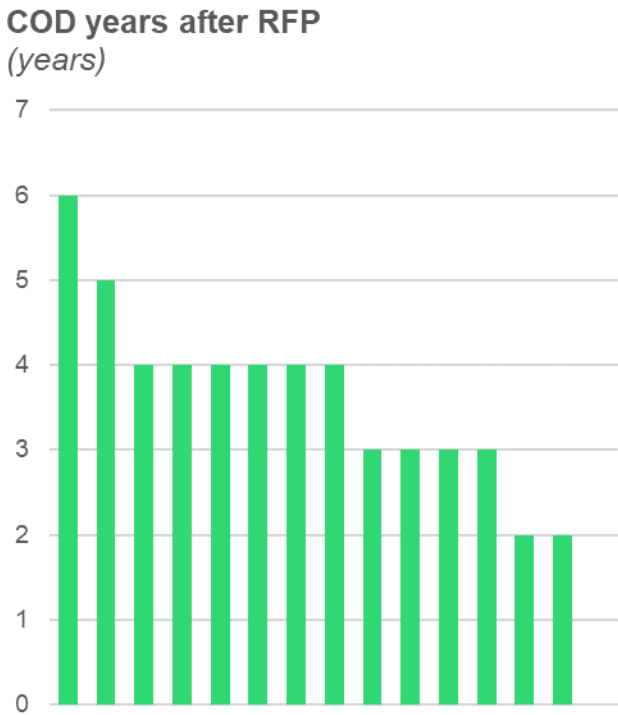
5-15 years

Contracts lengths vary based on need. Utilities use shorter contracts to sign existing generators to meet near-term needs



$ 5,000 – $10,000

Fees weren't necessarily tied to size of need or minimum bid size except for several cases of tiered bid fees tied to project size



2-6 years

Commercial online dates ranged from 2-6 years depending on the utilities' near-term capacity or energy needs

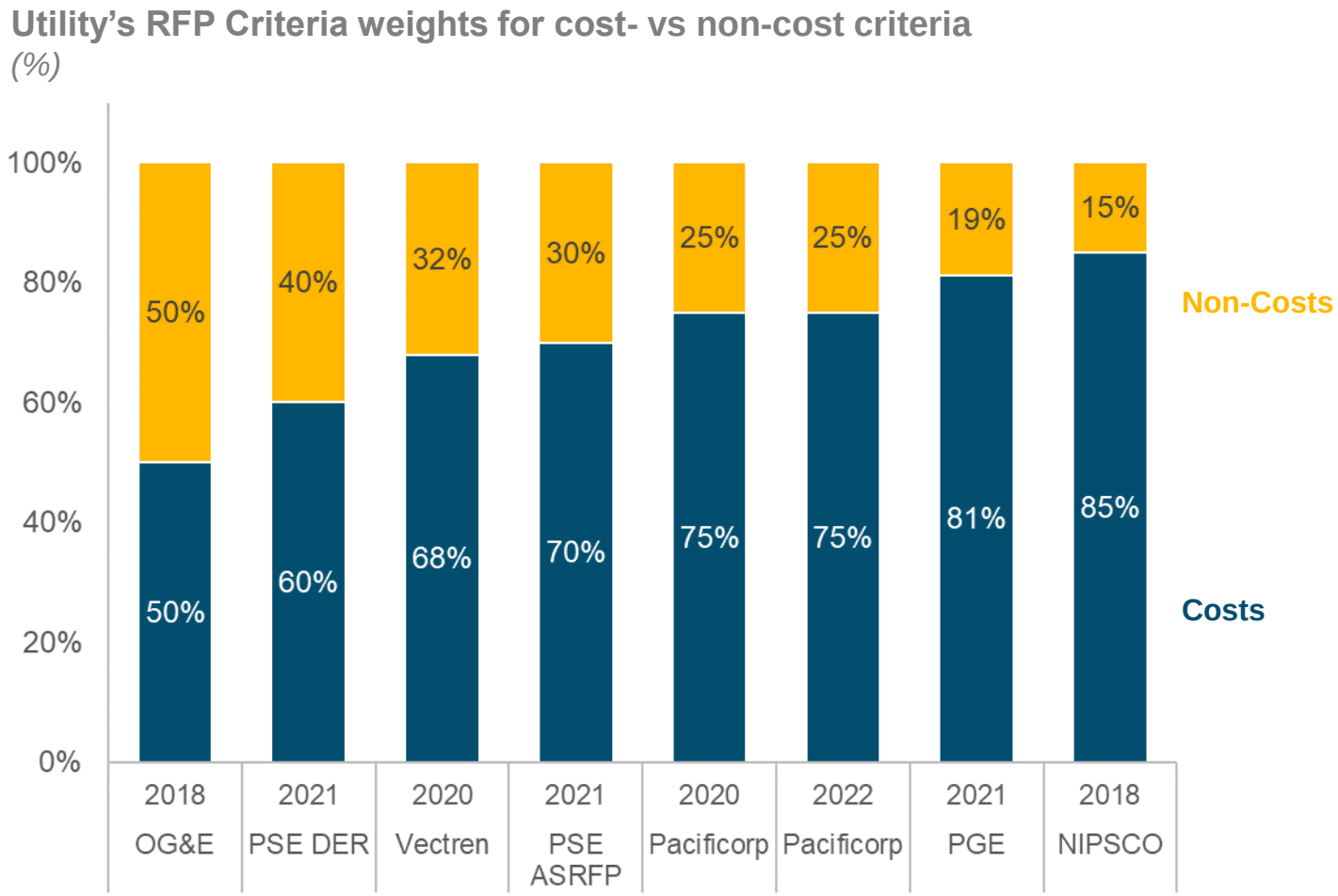
Examples of Screening Evaluation Criteria

Cost Criteria
Levelized Cost of Energy
Levelized Cost of Capacity
Carbon Cost
Fuel Cost
Transmission Upgrade Cost
Integration Cost
Clean Attribute Credits

Non-Cost Criteria	Description	
Renewable/Carbon-Free Attributes	Ability to provide zero-carbon attributes	Alignment with utility's needs
Policy Compliance	Resource alignment with state or federal policies	
Resource Operating Constraints	Utility's specific operational characteristics preferences	
Energy Delivery Risk	Limits on energy delivery due to transmission constraints	Project Risks
Technology Readiness	Maturity of the technology	
Site Control / Permitting	Current status of project site and status of permits	
Interconnection Status	Status of interconnection agreement or studies	
Supply Chain + Online Date Certainty	Ability to guarantee power delivery by specified COD	
Developer Experience	Measured in years	Bidder Risks
Developer Creditworthiness	Typically measured in standards ratings	
Environmental Impact	Impact on air, water, light, noise, etc.	Environmental, Equity, and Community Impacts
Land Use Impact	Impact on habitats, natural lands, and other sensitive locations	
Equity and Community Impact	Impact on equity and local communities	

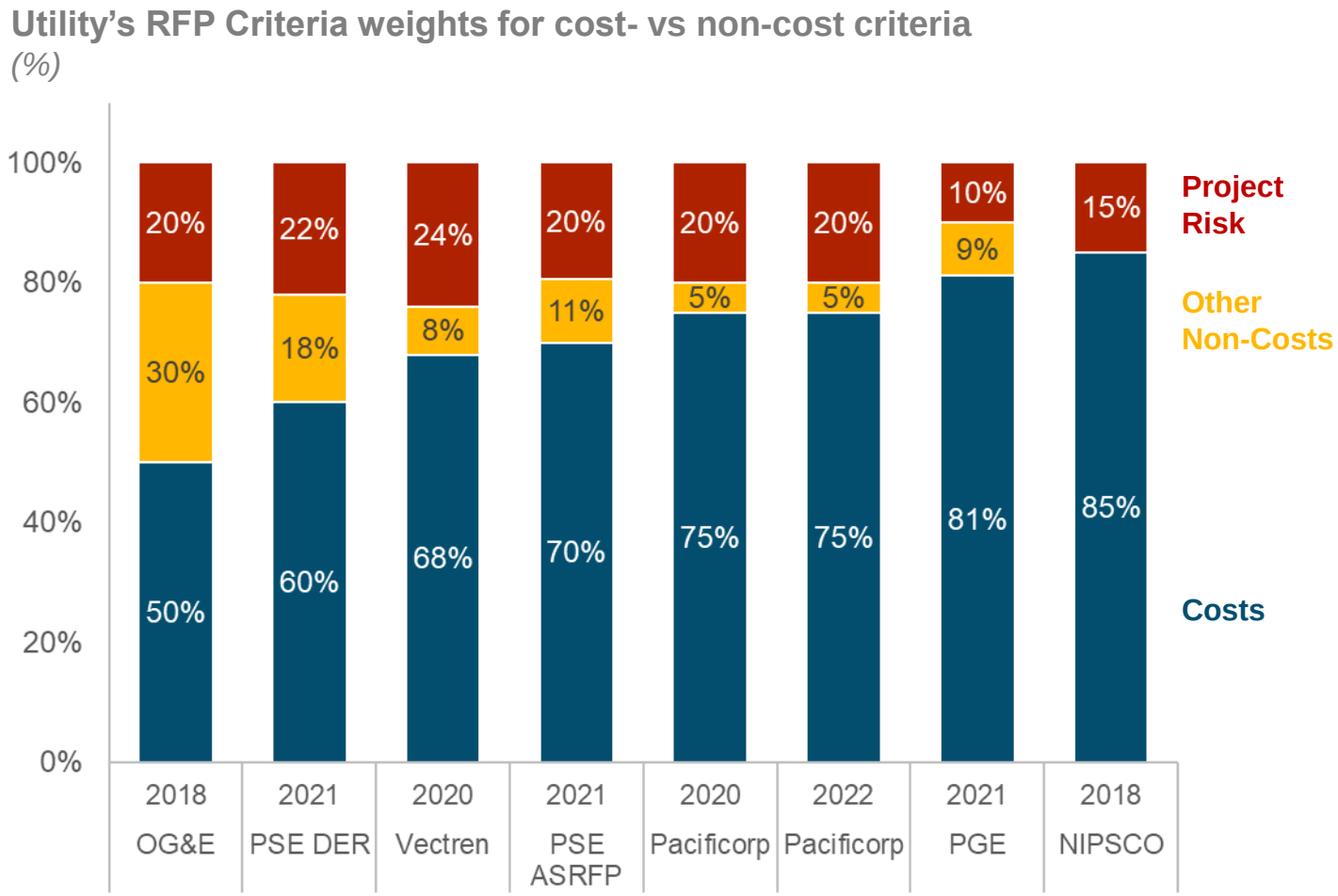
Screening Evaluation Criteria

+ **Of the RFPs reviewed, 6 utilities (8 RFPs) provided transparent cost and non-cost weights**



Screening Evaluation Criteria

- Of the RFPs reviewed, 6 utilities (8 RFPs) provided transparent cost and non-cost weights
- Cost criteria make up the majority of evaluation (50-85%)
- Within non-cost criteria, utilities typically give higher weight to bidder experience and delivery date certainty



Portfolio Analysis Approaches

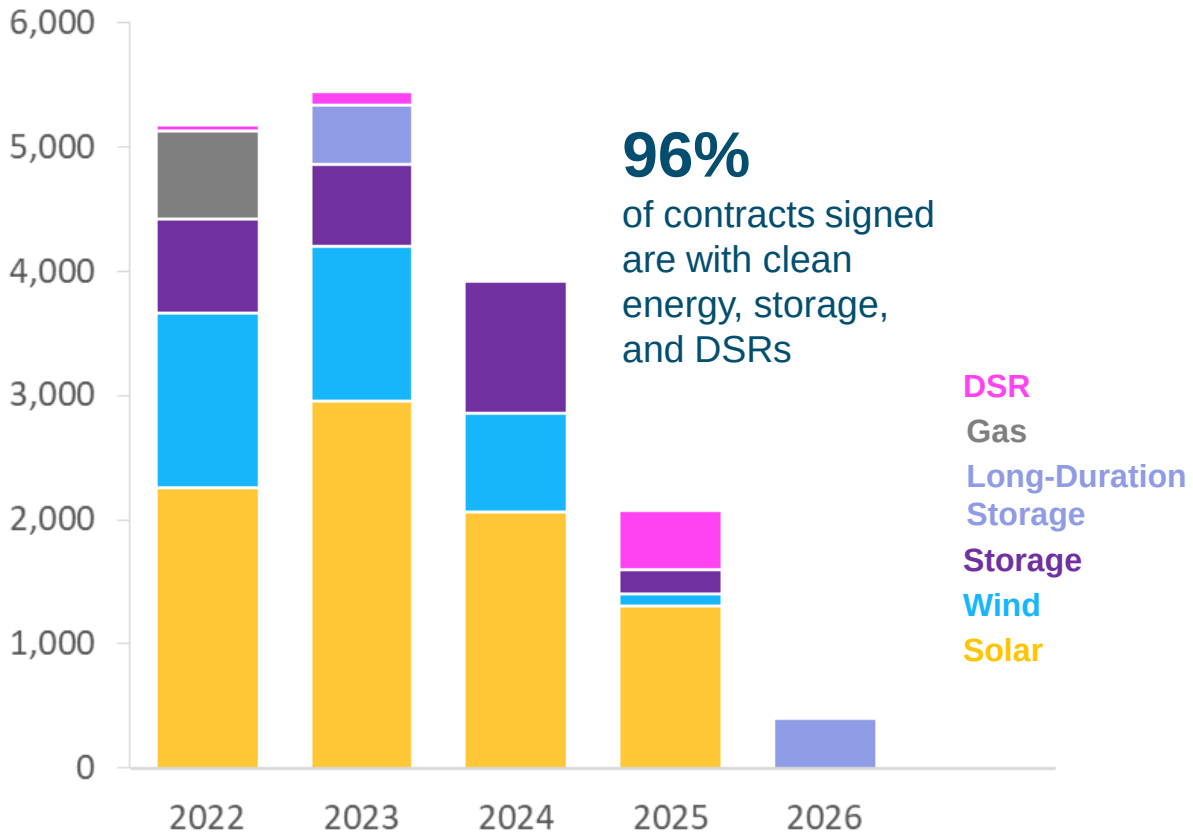
+ **Utilities use several approaches to determine lowest cost combination of bids to meet their needs**
  - **Price-taker approach**
    - Assumes resource doesn't change market prices; uses energy, ancillary service, and capacity market price forecasts to calculate resource's market value
  - **Production cost approach**
    - Uses production cost dispatch simulation modeling to capture impacts of each resource, or combination of resources, on a utility's portfolio costs
    - Can capture integration and flexibility costs explicitly
  - **Capacity expansion approach**
    - Uses least cost optimization modeling to select the lowest cost combination of bids to meet utility needs
    - Can capture integration and flexibility costs explicitly

Trends in Recent All-Source RFP Procurements

- **Renewables and storage are becoming increasingly cost competitive**
  - Larger projects are being selected due to economies of scale in cost
- **Targeted DSR procurements and programs have driven higher DSR penetration than competition in broader all-source RFPs**
- **All-Source RFP evaluation criteria vary across utilities, but most prioritize low cost and low project delivery risk to ensure timely availability of resources to meet specified needs at lowest cost**

Resource additions by COD year from RFPs reviewed

Nameplate MW



Discussion & Questions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RFP Evaluation Process
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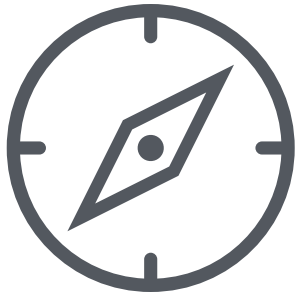
RFP Guiding Principles



- Process that is
  - Objective
  - Fair
  - Flexible to diverse resources
- Open to all commercially viable resource(s) and technologies
- Prioritizes reliable and affordable proposals that enable clean energy commitments

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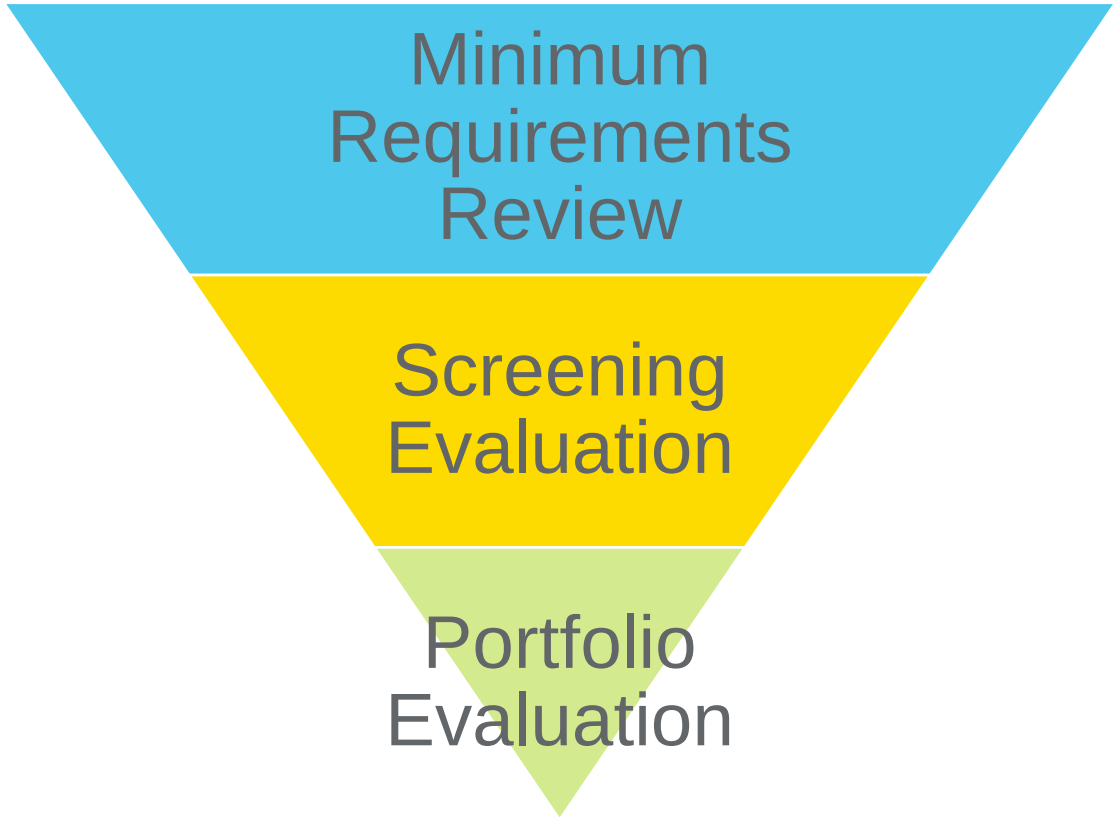
Proposal Evaluation Process

Consider all provided info

1. Review for minimum requirements
2. Screening on qualitative and quantitative factors
3. System-level portfolio evaluation
4. Negotiate with shortlist



Shortlisting and negotiations.

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RPAC RFP Questionnaire Responses

- Total Responses: 6
- Ranking of prescribed criteria categories based on respondent weightings
    1. Alignment with Need(s)
    2. Cost to Customer
    3. Project Specific Risk(s)
    4. Counterparty Risk(s)
- Other criteria suggested for evaluation: social consequences, project cost, technology maturity, reliability, environmental considerations, residential health, return on investment.

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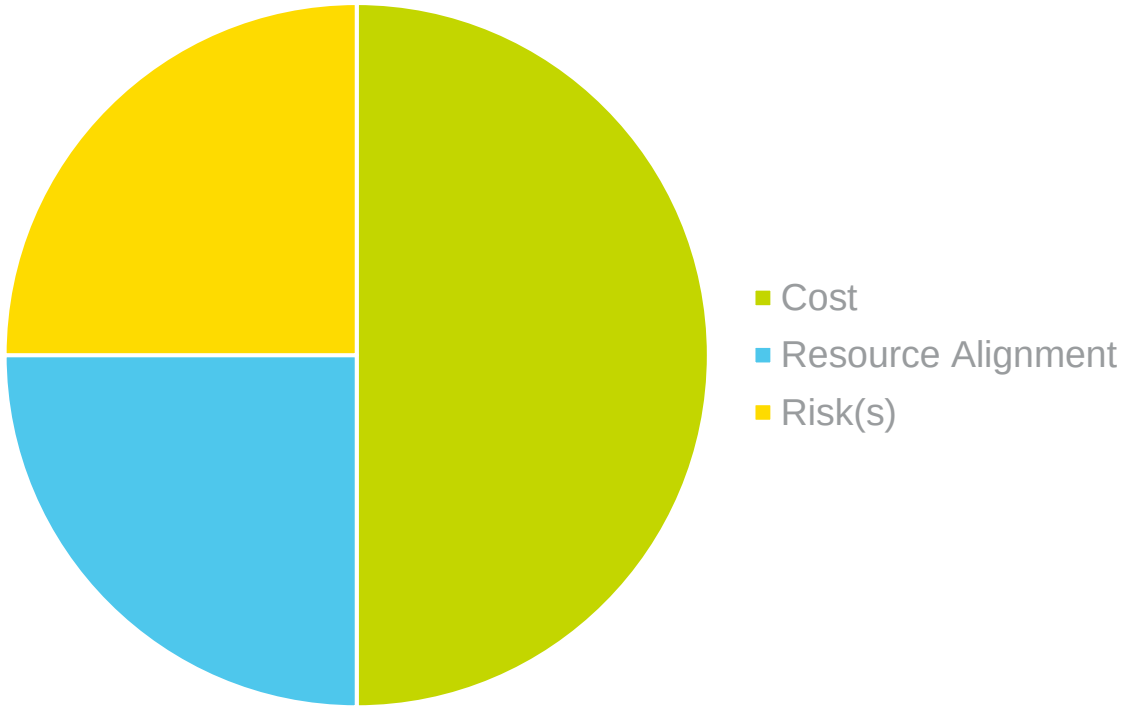
Screening Evaluation: Criteria and Weightings

- Cost (50%)
- Resource Alignment (25%)
- Risk(s) (25%)



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Screening Evaluation: Criteria Development

- Cost
  - Reliable Levelized Cost of Capacity
  - Levelized Cost of Energy
- Resource Alignment
  - Deliverability
  - Renewable/Carbon Intensity
  - Load Factor Impacts
  - Dispatchability
  - Ramp Rates
- Risk(s)
  - Site Control
  - Supply Chain
  - Respondent Experience
  - Safety Record
  - Technology Risk
  - Creditworthiness

Criteria must connect to measurable targets.

Targets may reflect binary conditions or range of acceptance.

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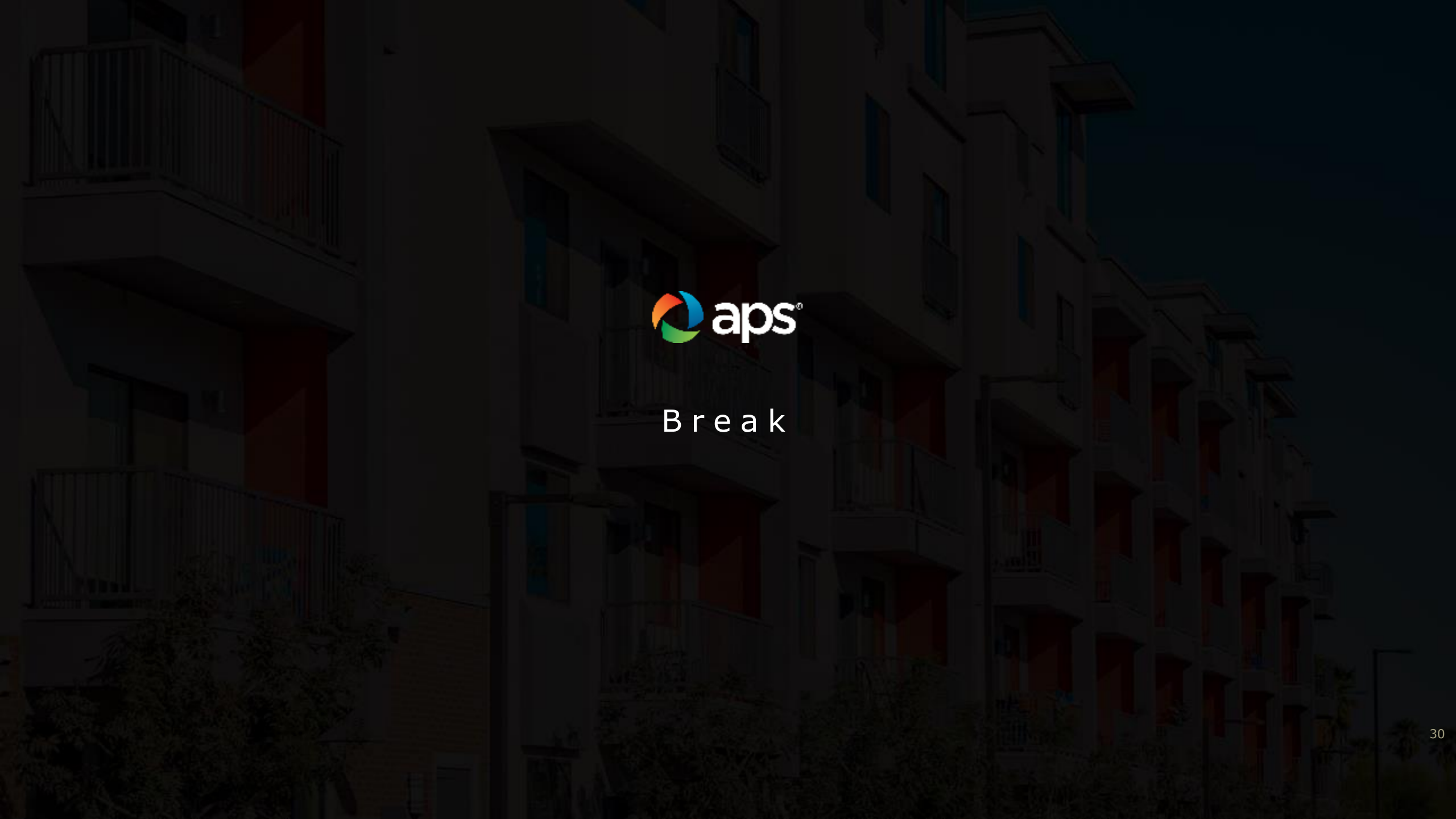
Discussion & Questions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APS Customer Programs

Who Works on DSM Programs at APS

- **Planning**
  - Customer to Grid Solutions (C2GS) Product Development
- **Program Delivery**
  - C2GS Customer Solutions/Customer Programs Teams
- **Outreach/Support**
  - APS Staff
    - Marketing, customer research, resource planning, communications, public relations, call center, aps.com, legal, regulatory, key accounts, community representatives
  - Program Implementation Vendors
    - DNV GL, CleaResult, EnergyHub, Uplight, Oracle Opower, Enervee
  - Third Party Evaluation
    - Guidehouse

DSM Guiding Principles

- Create programs with mutual shared value
- Align customer programs to system resource needs
- Provide meaningful customer education
- Provide tools that enable savings on modern rates

Working to Achieve….

Clean

Reducing emissions by saving energy and shifting load to match renewable generation

Affordable

Lowering costs for all customers by reducing peak demand and flattening load shapes

Reliable

Reliable and measurable load flexibility including consistent, system-wide peak load reductions and improved integration of solar resources

Customer focused

Customers are motivated by incentives and the ability to maintain low electricity rates and minimize grid's environmental impact

2022 DSM Program Portfolio

Program	Annual Coincident Demand Savings at Generator (MW)	Annual Savings at Generator (MWh)	Lifetime Energy Savings (MWh)	Cost Test Benefits ($)	Cost Test Costs ($)	Lifetime Net Benefits ($)
RESIDENTIAL						
Existing Homes	47.1	39,598	534,824	$ 29,407,280	$ 15,571,095	$ 13,836,185
Residential New Construction	20.7	32,155	621,192	$ 22,383,887	$ 17,328,421	$ 5,055,465
Multi-Family Energy Efficiency	3.5	10,569	194,370	$ 4,806,122	$ 3,989,157	$ 816,965
Limited Income Weatherization	2.1	4,061	73,098	$ 5,337,798	$ 4,007,657	$ 1,330,141
Conservation Behavior	38.5	77,319	152,721	$ 6,793,858	$ 3,178,692	$ 3,615,166
Energy Storage Pilot	1.5	0	0	$ -	$ -	$ -
Shade Trees	0.2	669	20,059	$ 347,263	$ 278,394	$ 68,869
Totals for Residential	**113.6**	**164,372**	**1,596,264**	**$ 69,076,208**	**$ 44,353,417**	**$ 24,722,791**
NON-RESIDENTIAL						
Existing Facilities	30.1	102,644	1,492,789	$ 40,289,039	$ 22,920,156	$ 17,368,882
New Construction and Major Renovation	15.7	65,485	925,751	$ 23,398,006	$ 14,038,428	$ 9,359,578
Energy Information Services	5.8	5,616	28,079	$ 2,200,265	$ 639,601	$ 1,560,664
Schools	6.2	24,445	316,411	$ 8,521,564	$ 4,995,570	$ 3,525,995
ARC Pilot	3.3	8,790	103,369	$ -	$ -	$ -
Totals for Non-Residential	**61.1**	**206,979**	**2,866,398**	**$ 74,408,874**	**$ 42,593,755**	**$ 31,815,119**
DEMAND SIDE MANAGEMENT INITIATIVES						
Demand Response	57.8	0	0	$ -	$ -	$ -
Energy Storage and Load Management ("Rewards")	215.7	66	66	$ -	$ -	$ -
Building Code and Appliance Standards	5.4	26,960	238,102	$ -	$ -	$ -
APS System Savings	0.0	6,020	90,294	$ -	$ -	$ -
Managed EV Charging Pilot	2.1	363	3,634	$ -	$ -	$ -
Energy and Demand Education	0.0	0	0	$ -	$ -	$ -
Peak Rewards	0.0	0	0	$ -	$ -	$ -
Tribal Community Energy Efficiency	0.1	242	3,472	$ -	$ -	$ -
Totals for Demand Side Management Initiatives	**281.2**	**33,652**	**335,569**	**$ -**	**$ -**	**$ -**
TOTAL	**455.9**	**405,002**	**4,798,230**	**$ 143,485,082**	**$ 86,947,172**	**$ 56,537,910**

2021 DSM Achievements Overview

- **DSM Support <u>$52.5 million</u>**
  - ❑ $7.9 million for Limited Income
- **EE Savings <u>319,000 MWh</u>**
  - ❑ Achieved >95% of 2021 DSM Goal
  - ❑ 127,000 MWh higher EE than 2020
  - ❑ Cumulative = 24.8% of 2020 sales
- **Peak Demand Savings <u>272 MW</u>**
  - ❑ 113 MWs from Cool Rewards
- **Launched many new Program Offerings for Customers**
- **Issued DDSR Aggregation RFP**

DSM Programs – Residential Highlights

- **Limited Income Weatherization**
  - Record year in 2021 $7.9M spent upgrading 835 homes
- **Existing Homes**
  - Launched connected water heating controls
  - Continued higher HVAC incentives for COVID
  - 73% of MWh goal
- **New Homes**
  - Launched 3 new measures: ducts in conditioned space, connected water heaters, EV pre-wire
  - Earned ENERGY STAR Partner of the Year Award in 2021 & *under consideration* for 2022
- **Multi Family Homes**
  - Launched new Connected Water Heating
  - 1.2 MWs Peak Demand

DSM Programs – Commercial Highlights

- **Solutions for Business New and Existing Facilities**
  - Launched 3 new measures
  - 166,000 annual savings and 2.5MM lifetime MWhs
- **Schools**
  - Can also participate in Existing Facilities program and ARC pilot
  - 112 projects, 25 participating school districts, and 18 free energy audits
- **(New) Advanced Rooftop Controls Pilot**
  - Promoted through 10 trade ally trainings, webinars and email campaigns to eligible customers
  - 3 Completed projects, 2 School Districts and 1 Non-profit facility

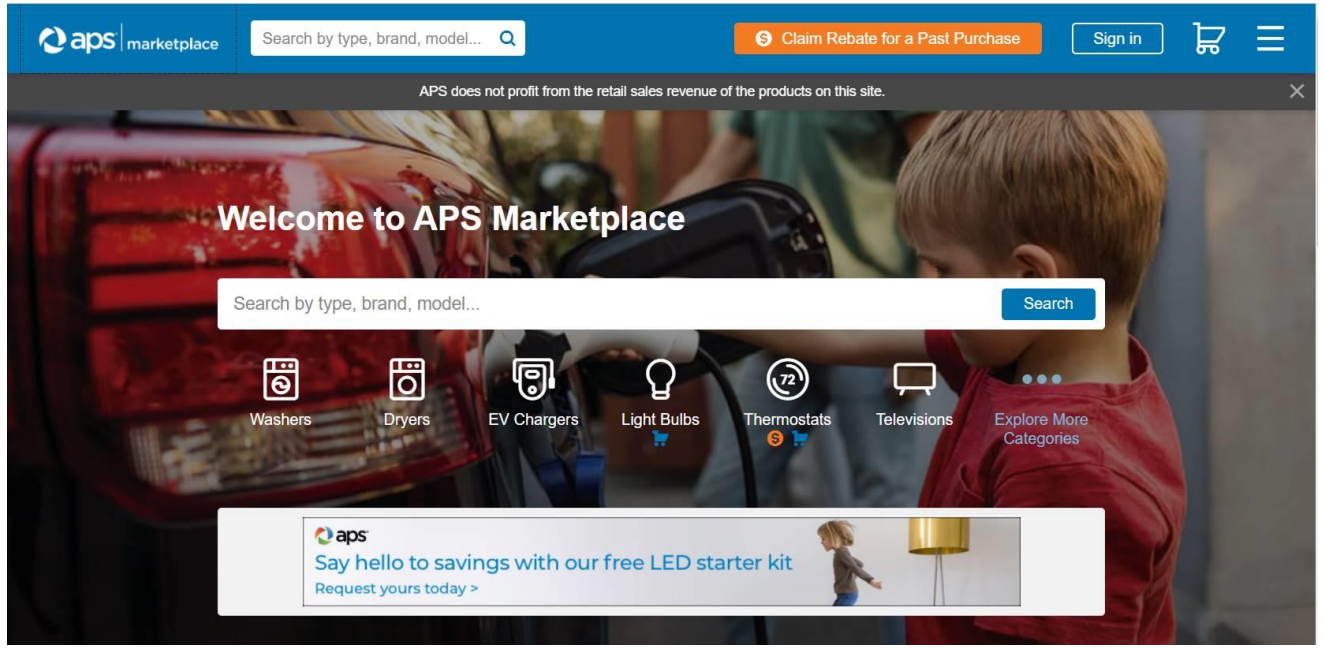
Energy and Demand Education

Customer Education Delivery Channels

- Online Marketplace
- Virtual Energy Check-Ups
- Online Energy Audits/Resources/Tools
- Energy Tips Education/Outreach
- Field Events Team

Participation

- 600,000 unique visits to Marketplace
- 33,100 smart t-stat DR Pre-Enrollment
- 23,500 online energy audits completed
- 19,100 free LED kits (76,400 bulbs)



Subject to Change – For Discussion Purposes

Conservation Behavior – 2021 Results

Savings

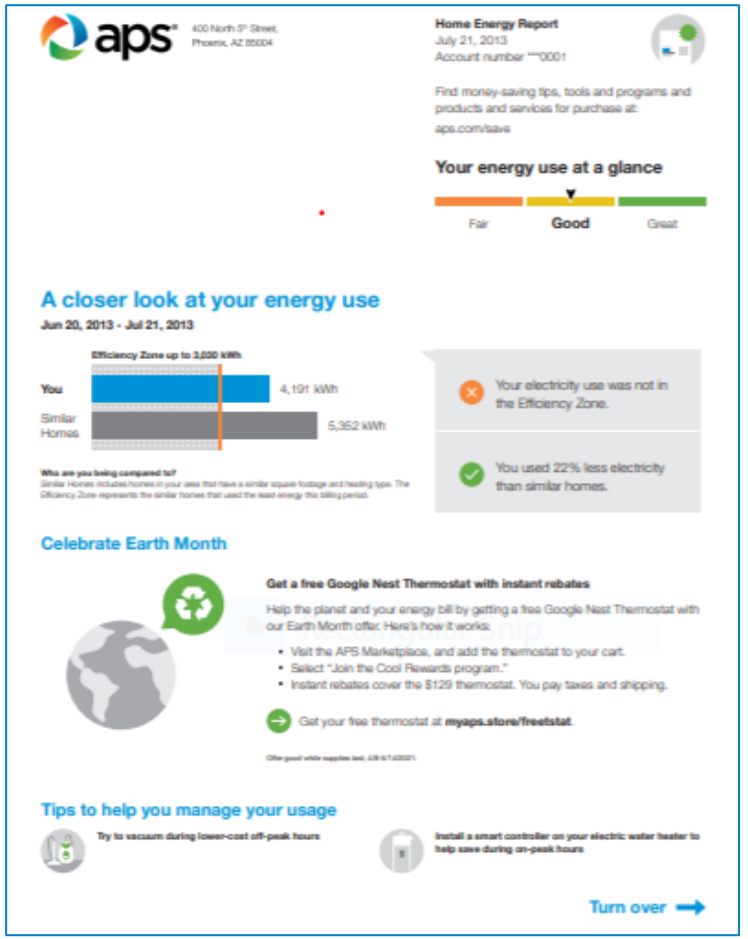
- 45,000 annual, 45,000 lifetime MWhs
- 42.6 MWs peak demand
- 64% of annual MWh goal

Program Delivery

- Launched Plan Coach with TOU and non-TOU rate plan customers
- Launched Spanish language Home Energy Reports
- New low/no cost tips for LMI households

Participation Summary

- 1,250,000 email reports
- 1,043,000 printed reports
- 2,576,000 TOU plan coach emails
- 228,000 Non-TOU plan coach emails
- >35,000 customers visited program web pages
- 464,000 total program participants



Conservation Behavior – Plan Coach

TOU rate plans – print sample, front page

aps 400 North 5th Street, Phoenix, AZ 85004

Home Energy Report
July 21, 2021
Account number ***0001

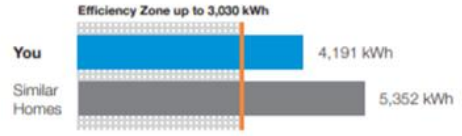
Find money-saving tips, tools and programs and products and services for purchase at:
aps.com/save

Your energy use at a glance

Fair | **Good** | Great

A closer look at your energy use

Jun 20, 2021– Jul 21, 2021



Your electricity use was not in the Efficiency Zone.

You used 22% less electricity than similar homes.

Who are you being compared to?
Similar Homes includes homes in your area that have a similar square footage and heating/cooling type. The Efficiency Zone represents the similar homes that used the least energy this billing period.

Celebrate Earth Month

Get a free Google Nest Thermostat with instant rebates

Help the planet and your energy bill by getting a free Google Nest Thermostat with our Earth Month offer. Here's how it works:

- Visit the APS Marketplace, and add the thermostat to your cart.
- Select "Join the Cool Rewards program."
- Instant rebates cover the $129 thermostat. You pay taxes and shipping.

Get your free thermostat at **myaps.store/freetstat**.

Offer good while supplies last, 4/8-5/14/2021.

Tips to help you manage your usage

Use a plug-in power meter to find the biggest energy users in your home

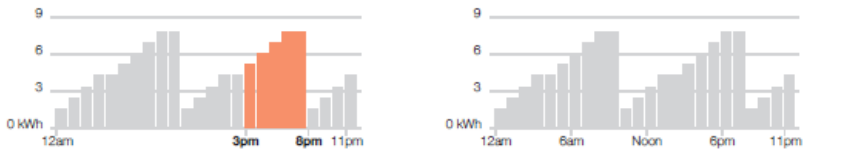
Talk with your household members about your energy savings plan

Turn over

TOU rate plans – print sample, back page

Your average daily use during off- and on-peak hours

Save with lower-cost off-peak hours, before 3 p.m. and after 8 p.m., Monday-Friday. On weekends, save with off-peak hours all day.



The shorter your orange bars, the more you can save on your bill. If your orange bars are high, look for more opportunities to save.

3 easy ways to save this winter

Set your thermostat to 68°F when at home and 60°F when away on winter vacation.

Weatherstrip windows and doors to keep warm air in and cold air out.

Go online to see your energy patterns and where you can use less.

Find more tips at **aps.com/save**.

Frequently asked questions

What's a kWh?
A kilowatt hour (kWh) is a way to measure electricity use. A 100-watt lightbulb uses 1 kWh every 10 hours.

How does my home compare to similar homes?
Similar Homes includes homes in your area that have a similar square footage and heating type. The Efficiency Zone represents the similar homes that used the least energy this billing period. You can view your home information at aps.com/energyreports.

Want a more accurate home energy report?
For a more accurate look at your energy use and more personalized tips, please update your home profile at: aps.opower.com/ei/x/homeprofile

Why am I receiving these reports?
You've been selected to participate in our Home Energy Reports program, which provides personalized insights and recommendations to help you save energy.

How do I stop receiving reports?
Email us at aps@aps.com. You can also call us for assistance at (602) 371-3659 (In Metro Phoenix) or (855) 250-1666 (Outside Phoenix).

We're here to help you save money

Visit us at aps.com/energyreports

Find more energy saving programs

aps.com/save

aps

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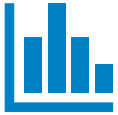
Conservation Behavior – October 2021 Customer Survey

Summary of Key Findings:



TOU Plan Coach is improving customer comprehension and satisfaction with their rate plan.

Compared to non-recipients, APS customers receiving TOU Plan Coach communications are:

- +14% more likely to be satisfied with their rate plan
- +10% to +14% more likely to know when on-peak hours start or end
- +9% more likely to know how to reduce their usage during on-peak hours
- +11% more likely to report energy shifting behavior

The TOU Plan Coach program is improving customer satisfaction with APS.

Compared to non-recipients, customers receiving TOU Plan Coach communications rate APS higher:

- +8% increase in overall satisfaction; -7% reduction in overall dissatisfaction with APS
- +9% "APS makes an effort to help me manage my monthly energy usages" (JD Power Price metric)
- +10% "APS creates messages that get my attention" (JD Power Comms metric)
- +10% "APS keeps customers informed about what they are doing to keep energy costs low" (JD Power Comms metric)

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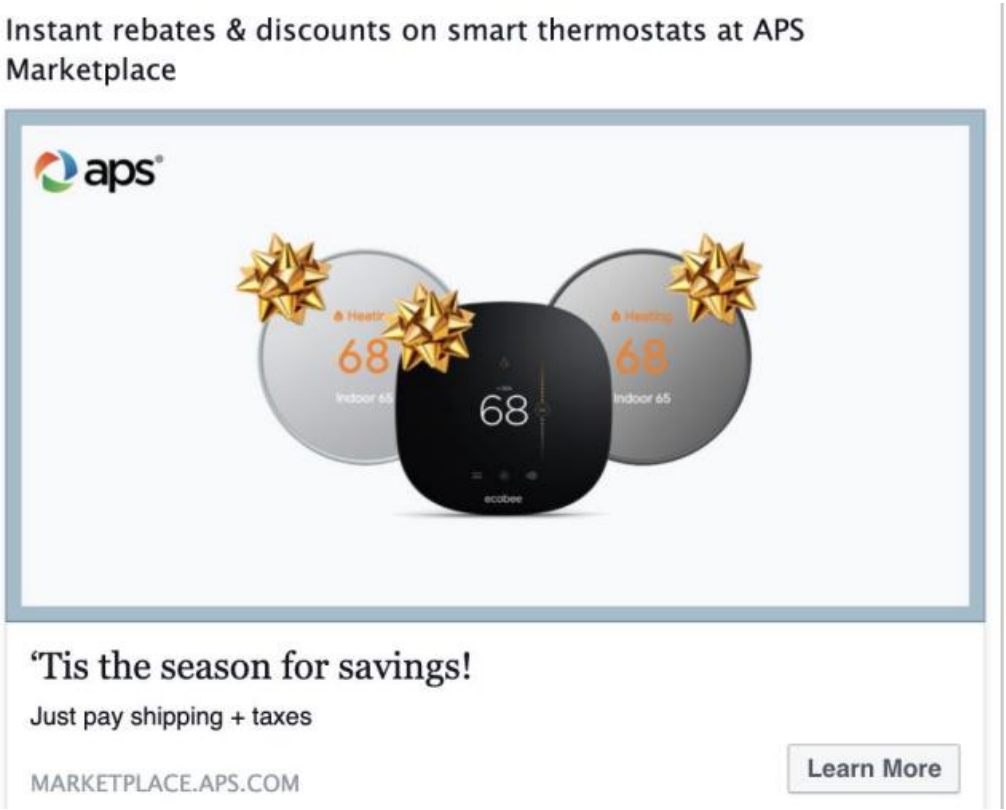
Demand Response/Rewards

Cool Rewards
- 57,000 participating thermostats
- 113 MW peak hour impact
- Called 7 successful events
- 60,583 thermostats enrolled as of 3/15/2022
- Saved approximately 80MW during its peak hour in Summer 2021

Peak Solutions C&I
- 68 enrolled customers
- 28 MWs peak hour impact
  - Lower than contracted due to COVID
- Called 7 successful events

Cool Rewards Program Delivery
- Doubled participation in 2021!
- Largest T-Stat DR capacity addition in the US*
- Free thermostat promos leverage OEM discounts
- DR device pre-enrollment



*according to program partner data

43 Subject to Change – For Discussion Purposes Only

1MM+ residential customers

Started with BYOT, transitioning to **full scale DER aggregation**

System and feeder targeted load reduction

System and feeder voltage support

Renewable integration

On-demand capacity

EnergyHub

aps

Cool Rewards

Nest

ecobee

Honeywell

ALARM.COM

LUX

EMERSON

Building36. AN ALARM.COM COMPANY

vivint.

Radio Thermostat

Reserve Rewards

Rheem

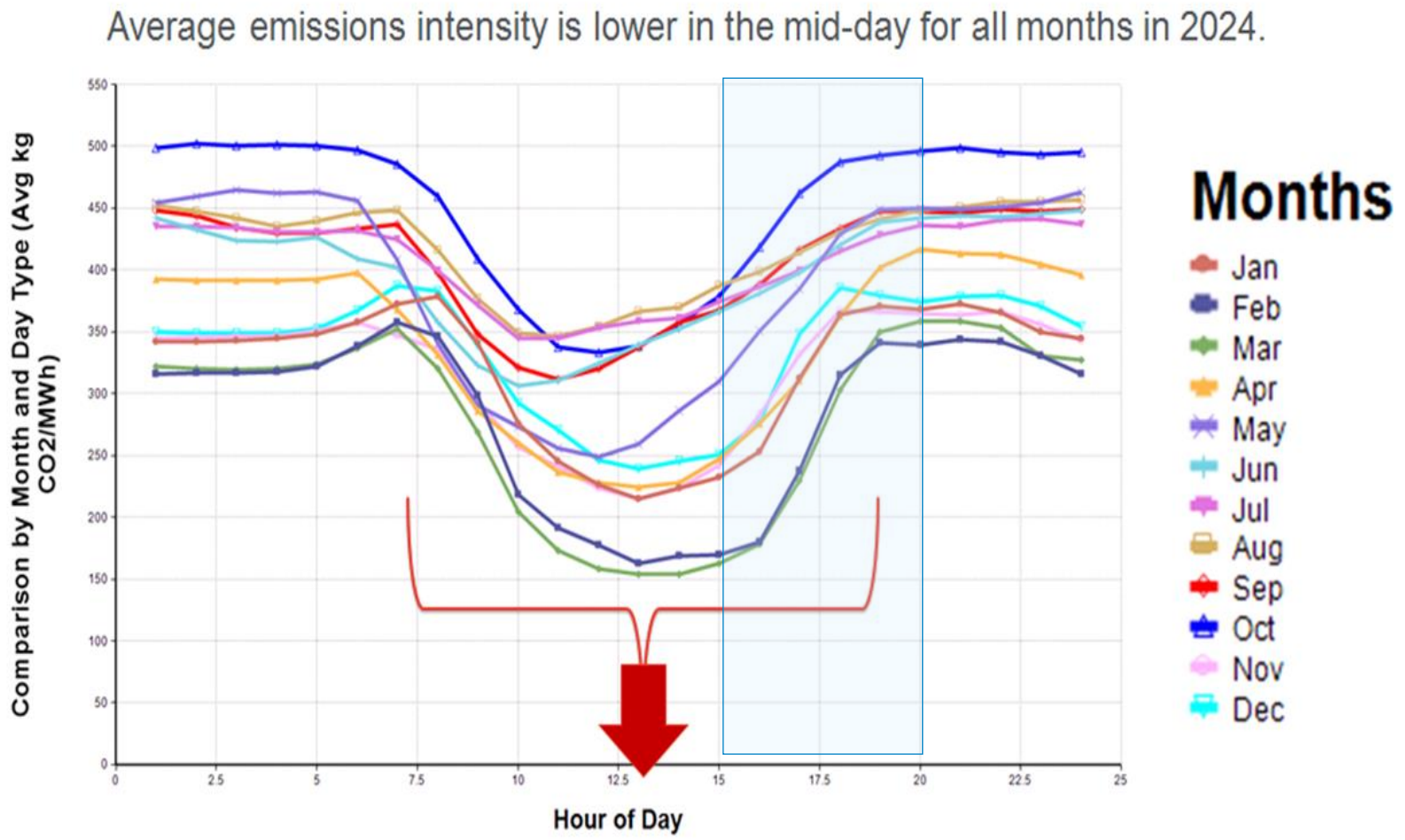
Storage Rewards

SUNVERGE

Solar Communities

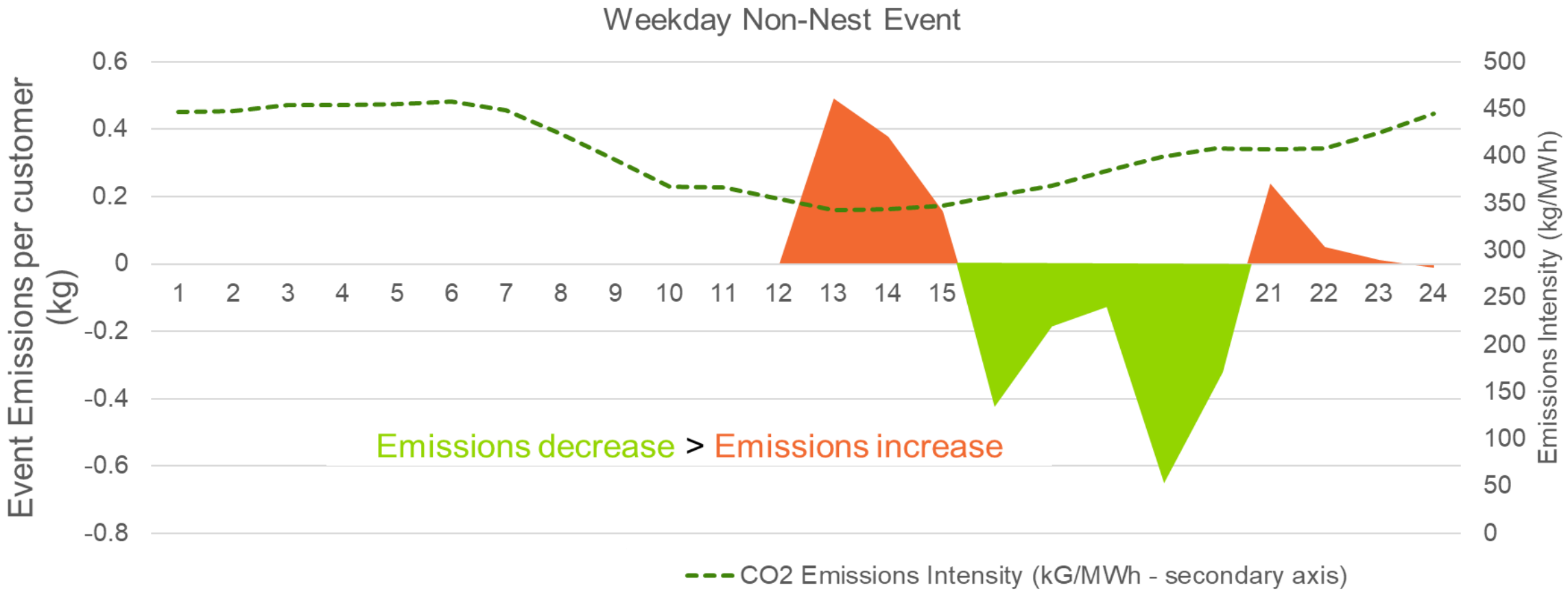
SMA

APS Carbon Intensity Lowest in Midday



Cool Rewards Smart T-Stat DR Emissions Reduction

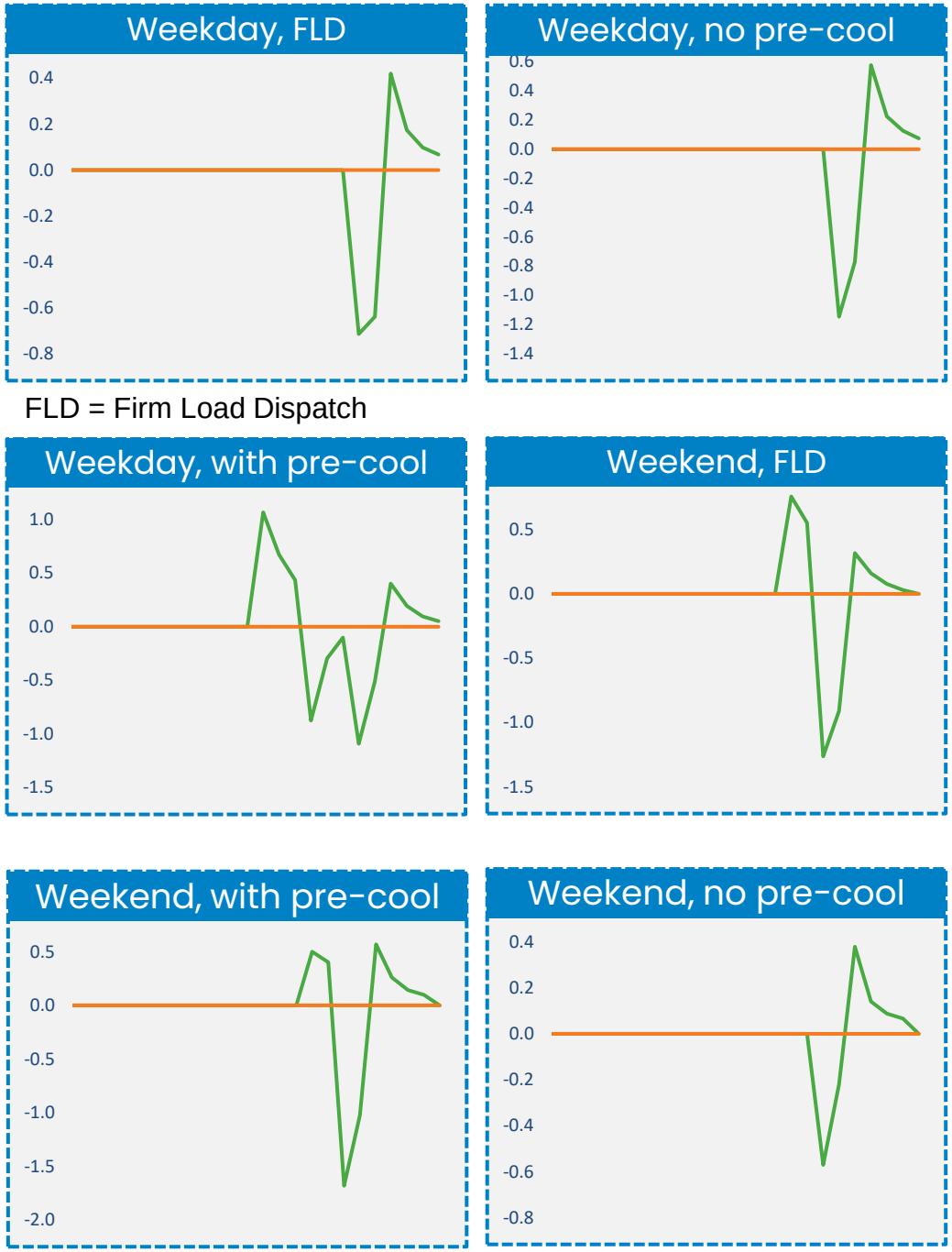
With pre-cooling, consumption is shifted to the mid-day when emissions intensity is lowest, resulting in a net impact of -.31 kg CO2 per customer.



Cool Rewards Smart Thermostat Demand Response Events

Multiple load curves to meet multiple needs

- Thermostat Capabilities
- Customer Comfort
- TOU Rates Interaction
- Resource Value
- Decarbonization Value



(New) Residential Battery Pilot

- $3 million, 3-year pilot launched in October
- Incentives for newly purchased battery systems
  - **Data share:** $500/kW up to $2,500 maximum per home
  - **Capacity share:** Additional $1,250 per home
- BYOD design provides customer choice
- Current battery partners include EnPhase, SolarEdge, Tesla (added February 2022)
- 18 applications received to date

EV Load Management

- **EV Data –**
  - Launched new EV data pilot in November to collect info on baseline charging patterns
  - Customer incentives
    - $25 sign-up; $5/month
  - 855 cars enrolled to date!
- **EV Chargers –**
  - New $250 rebates for ENERGY STAR® Level 2 connected EV smart chargers launched in December

Background on Decision No. 77855

- APS was ordered to file a tariff that permits and provides compensation for the aggregation of distributed energy storage and distributed demand-side resources
- Calls for the valuation of operating characteristics and various DDSR technologies
- Provide a process to incorporate stakeholder feedback before submitting the proposed tariff

Value Streams

- **Capacity**
- **Demand Reduction**
- **Load Shifting**
- **Locational Value**
- **Voltage Support**
- **Ancillary and Grid Services**

Technologies

- **Connected Smart Thermostats**
- **Water Heating Controls**
- **Pool Pump Controls**
- **Managed EV Charging**
- **Electric Batteries**
- **Building Energy Management System**

2021 All-DDSR RFP

APS requested proposals for multiple grid services

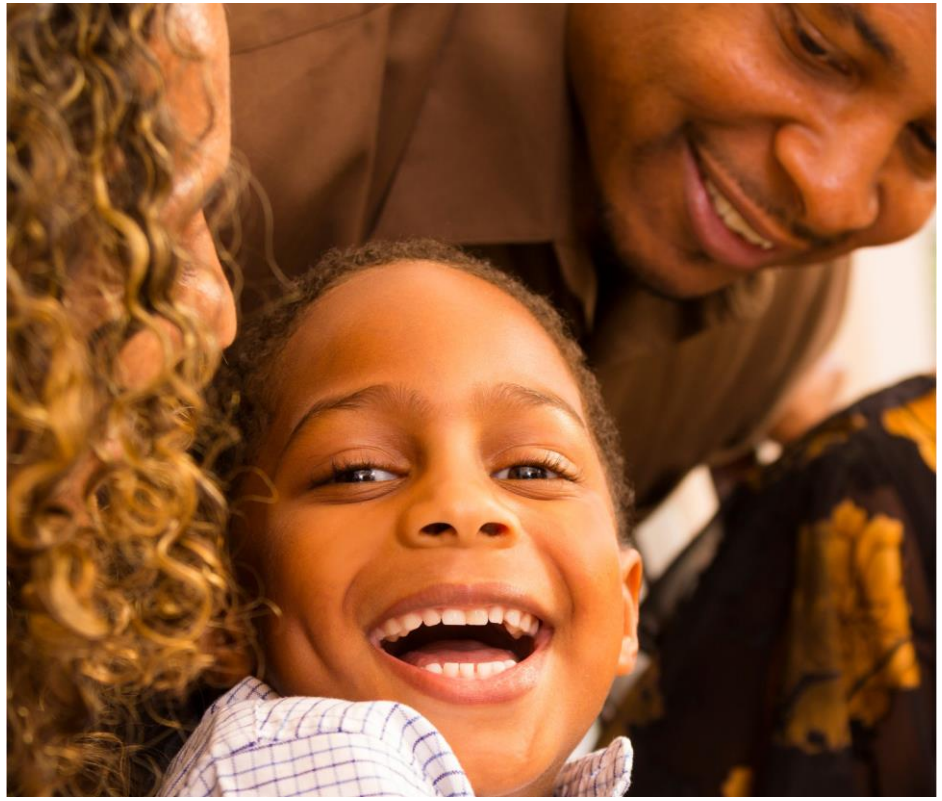
Product A	**Product B**	**Product C**
Focus: System capacity, energy and load shifting value	Focus: Locational value on 6 APS feeders	Focus: Ancillary services
5-40 MW aggregated load	*1-5 MW aggregated load*	*1-5 MW system support*

APS received 12 total bids from six bidders, with at least two bids for each of these services

RFP Preliminary Selection

- Selected three products
  - Product A = 5 MW system capacity
  - Product B = 2.5 MW on 6 feeders
  - Product C = 5 MW ancillary services
- All three grid services products will be provided by aggregating residential batteries
- Anticipating services to be delivered starting in early 2023

2022 DSM Plan Overview



- Uses recently approved 2021 DSM Plan as starting point
  - Continues all current programs
  - Includes all new measures/modifications
  - Adds DR savings – Peak Solutions, Cool Rewards, Storage
  - Adds EE savings – targeting 1.4% level in 2022

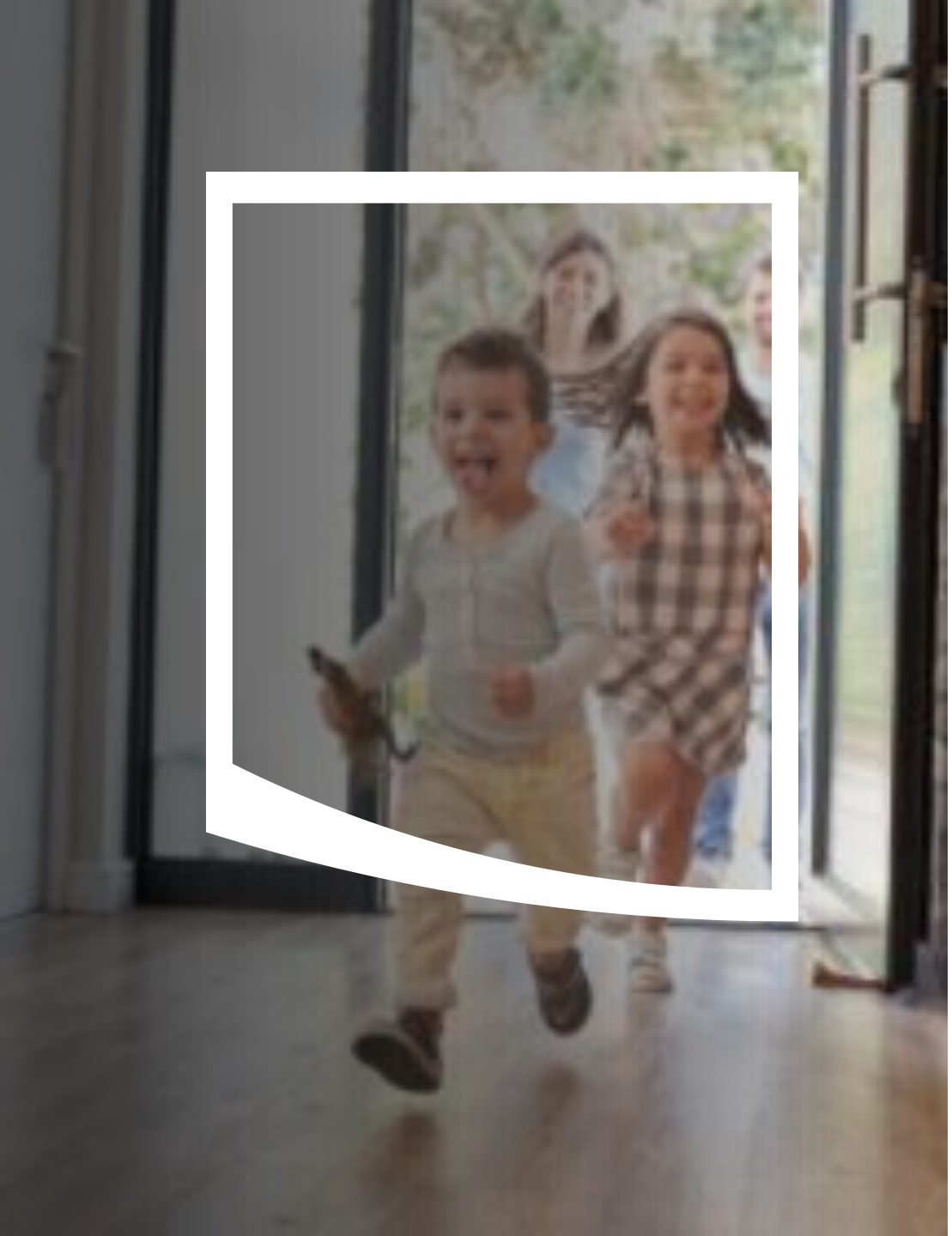
2022 DSM Plan Focus Areas

Increased DR

- Residential Energy Storage Pilot
- Peak Solutions – Expand from ~28 MWs to 45 MWs
- Cool Rewards – Expand from 113 MWs to >150 MWs

Increased EE Savings

- Non-Res Existing Facilities, New Construction, Schools
- 15 New Non-Res measures
- Smart thermostats, HVAC replacement
- Conservation behavior programs – HERS expansion, Behavioral DR
- Credit for iDSM measures (EE + DR + load shifting)
- Equity – Limited income, MF, Schools, Tribal Communities
- Shade Trees program targeted to disadvantaged communities



Recent Nominations/Awards

A·E·S·P
ASSOCIATION OF ENERGY SERVICES PROFESSIONALS
ENERGY AWARDS

ENERGY STAR

Smart Electric Power Alliance

PLMA™
Load Management Leadership
17th Award Winner
Program Pacesetter

EPRI
ELECTRIC POWER RESEARCH INSTITUTE

ArizonaForward
ESTABLISHED 1969

aps

Discussion & Questions


aps
2020 ASRFP Update
aps
DEERE

2020 Procurement Updates

ASRFP issued December 2020
capacity and renewable energy

→ 88 unique projects / ~600 proposals
solar, wind, storage, renewable+storage, gas, DR

→ Executed 7 contracts in 2021
solar, wind, solar+storage, gas

→ 823 Clean MW
1,388 total MW

- Transactions represent a balanced portfolio of third-party PPA and APS ownership with focus on clean, reliable, affordable resources to serve our customers
- Contracts blend mature and emerging technologies and have been executed with large, experienced developers
- Commercial headwinds are significant (supply chain constraints, rising prices, regulatory and legislative uncertainty)

- Currently negotiating 3 additional transactions
  - Solar + storage totaling 513 MW
- Transactions are tied to APS's Green Power Partners (GPP) program, which enables large customers to meet their sustainability goals; benefits APS and all customers by advancing clean energy projects through premium payments made by participating large customers
- Intend to execute contracts before issuing the 2022 ASRFP

Observations

- Bidders are interested in understanding scoring criteria (we will provide additional transparency in this regard in the 2022 RFP)
- Critical to get a firm understanding of counterparty and project risk in the current commercial environment; project delays have become the norm – must contract with those most likely to be successful
- Prices are extremely volatile; suppliers and counterparties willing to hold price for only short periods of time, and increasingly negotiating index-based pricing
- Counterparties pushing hard to expand bounds of Force Majeure as a result of pandemic impacts and uncertainty of future deliveries
- Counterparties are very concerned about our regulatory environment
- Time is of the essence in order to lock in schedule and price

Discussion & Questions

Open Discussion & Next Steps