Residential and Small Commercial Solar and Battery Pilot Program Development

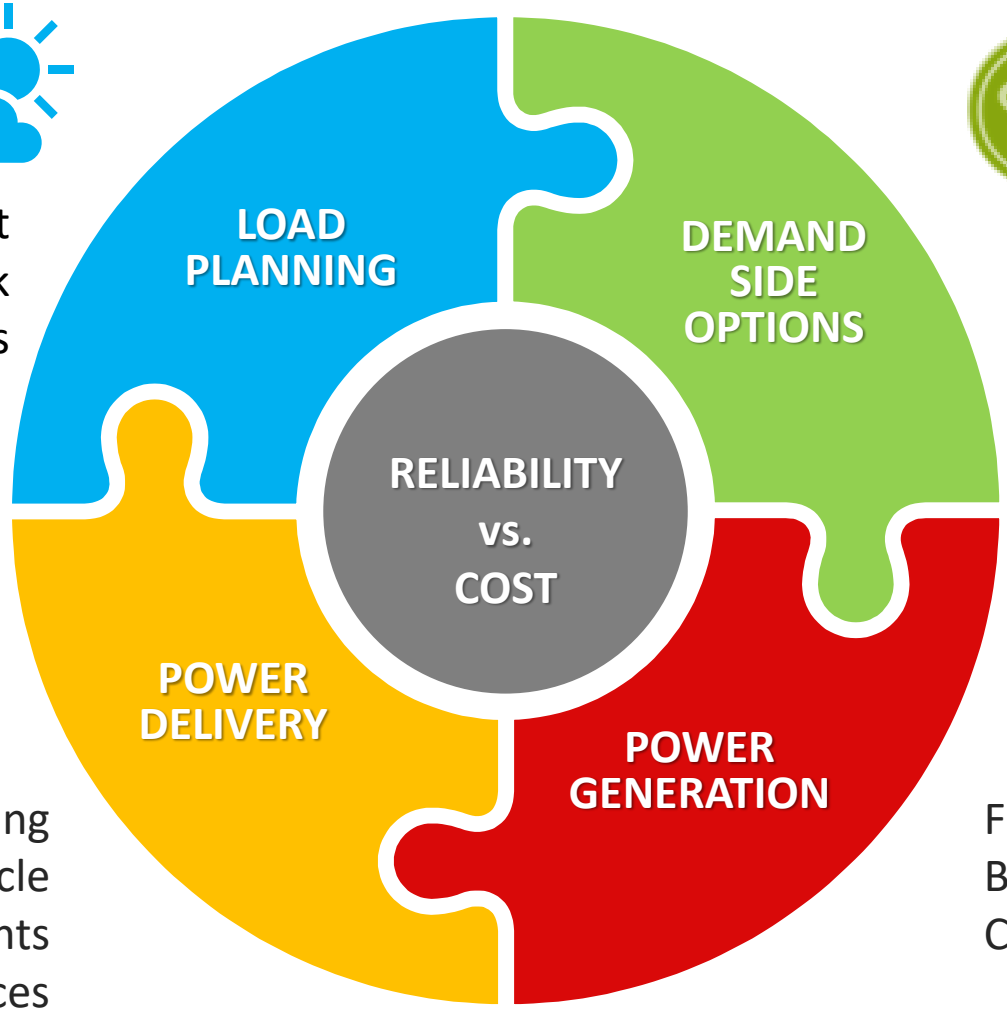
Design Overview
July 10, 2024

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Planning for the Future through the IRP Process

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Load Forecast
Reserve Margins Impact Risk
Capacity Worth Factors

Energy Efficiency
Demand Response
Backup Generation

Capital vs. O&M Spending
Age of Grid vs. Replacement Cycle
Generating Plant Retirements
Distributed Energy Resources

Fuels & Carbon Forecast
Build, Contract, Buy, Retire
Coal, Nuclear, Gas, Hydro, Renewables

2023 IRP Update Stipulation (Applicable Line Items)

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Resiliency	13. DER Colocation Program proposed to be implemented through the DER Colocation Tariff (DCL-1) is approved with modifications 14. DER Customer Owned Program proposed to be implemented through the DER Customer Owned Tariff (DCO-1) is approved with the modifications **20. The Company will continue to investigate opportunities to use DERs and grid enhancing technologies**
Demand Response	**15**. Curtailable Load Program proposed to be implemented through the Curtailable Load Tariff (CL-1) is approved **16.** Approval of amended certificate for the Residential Thermostat DR Program and continued evaluation to determine the optimal participation level for the program to cost effectively meet future demand reductions
Renewables	**17. Evaluate and develop a RES and Small COM solar + storage pilot for the 2025 IRP; Company must have 2+ collaborative meetings with Staff and interested parties, the first of which must be w/in 90 days** **21. Investigate additional BTM opportunities for DSM, DERs, energy storage, and related funding opportunities that have been enabled under the IRA and Title 17 of the Energy Infrastructure Act**

Georgia Power Program Planning Principles

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Deliver clean, safe, reliable energy to all customers

Balance system value with participating customer value

Maintain affordability, equity, & minimize cross-subsidization

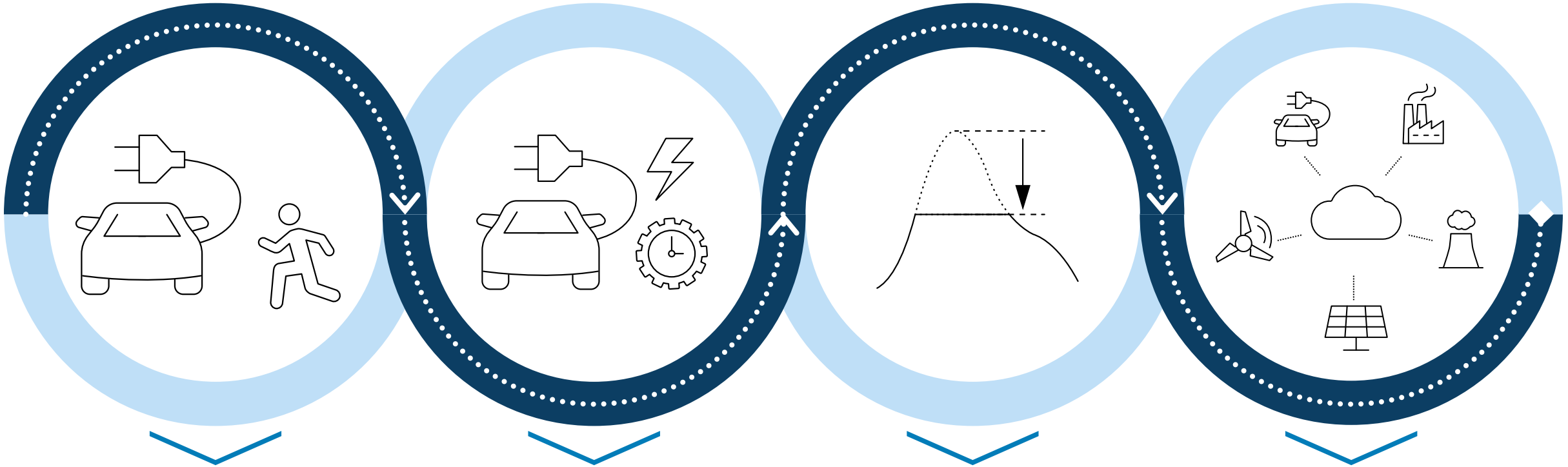
Balance the needs of existing customers while supporting economic growth

Leverage market ready solutions and technology advancements

Meet Customer needs through innovative designs

Customer Program Design Objectives

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Customer education and adoption

Accurate identification of asset value

Establish and enhance value through planning process

Maximize value of carbon-free resources to the grid

Existing Options for On-Site Solar or Solar + Storage

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	Customer Connected Solar Program (CCSP)	Renewable & Non-Renewable Resources (RNR)	Qualifying Facility (QF)	Energy Offset (EOO)
	C& I customers seeking a fixed-long term PPA with RECs for solar output without impacting operations.	*Customers reduce their usage & monthly bill with a "right-sized" BTM system.*	*Customers offset larger loads with a BTM system -OR- offset energy costs through a long-term PPA.*	*Customers install a larger solar system (designed to consume energy onsite) and/or battery and want to reduce usage as much as possible.*
Project Location	• Customer-sited • Front of the meter (FTM)	• Customer-sited • Behind the meter (BTM)	• Customer-sited or standalone • FTM or BTM	• Customer-sited • Behind the meter (BTM)
Segment	Commercial & Industrial	Residential Commercial & Industrial	Commercial & Industrial	Residential Commercial & Industrial
Project Size Limitation	125% of customer's peak demand (up to 3 MW)	• **Res.** – 10 kW (solar) • **C&I** - ≤250 kW (solar) OR 125% peak demand	≤ 80 MW	None
Customer Value	• Long-term contract & payment for energy generated • RECs retired on behalf of customer • 30% Federal ITC	• Offset/reduce retail kWh • Solar avoided cost* + 4¢ per kWh for excess energy • Customer keeps RECs • 30% Federal ITC	• **BTM:** Offset/reduce retail kWh + real-time avoided cost/kWh for excess energy • **FTM:** real-time avoided cost/kWh for generation • Customer keeps RECs • 30% Federal ITC	• Offset/reduce retail kWh • Customer keeps RECs • 30% Federal ITC
Contract Term	10-30 years	5 years or prevailing tariff T&Cs	variable	None

** 2024 Annual Solar Avoided Cost = 4.448¢ /kWh*

Existing DER Programs Overview

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	Distributed Energy Resources (DER) Pilot RAS/DRC Tariffs	DER Co-Location Program DCL Tariff	DER Customer-Owned Program DCO Tariff
	A turn-key solution to ensure customer and local reliability and a capacity resource during extreme need.	*A utility-scale turn-key solution to ensure customer and local reliability and as a capacity resource that can be economically dispatched.*	*A medium to large scale customer-owned asset that ensures customer reliability and allows for Georgia Power economic dispatch.*
Project Orientation	• Customer-sited • Georgia Power owned • Behind the meter	• Customer-sited • Georgia Power owned • Front of the meter	• Customer-sited • Customer-owned • Front of the meter
Use Cases	Utility dispatchable for either local/customer outage or extreme utility supply/demand events.	Utility dispatchable for either local outage or for economic supply. Requires firm fuel supply.	Dispatchable for either local outage or for economic supply. Requires firm fuel supply.
Project/Rate Eligibility	• RAS: 200kW Annual Peak Load • DRC: 1000kW Demand Reduction but can aggregate facilities if each is > 200kW *Some marginal rates ineligible*	• Installed asset nameplate ≥ 10MW	• Installed asset nameplate ≥ 1MW and < 10MW, can aggregate if each is 250kW or greater
Customer Value	Monthly levelized payment & credit RAS: Capital and O&M Costs DRC: 100% Capacity Value (Firm Load Only)	Lump sum upfront payment Capital and O&M Costs less 75% of system value	Monthly levelized credit Credit for 75% of the system value
Contract Term	Life of the DER asset	Life of the DER asset	Variable through 2031

Solar Plus Storage Value Propositions

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Solar Plus Storage Pilot Potential Learnings

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Technical Capabilities



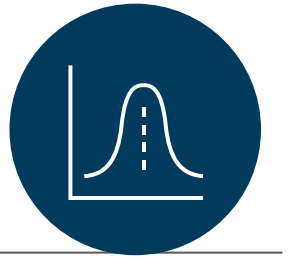
- ❑ Device performance characteristics
- ❑ Communications and control protocols
- ❑ OEM/platform analytics, Evaluation, Measurement, &Verification
- ❑ Utility system integration

Market Acceptance and Experience



- ❑ Customer segment adoption rates and influencers
- ❑ Customer communication needs
- ❑ Appropriate compensation mechanisms
- ❑ Installer/developer process or experience
- ❑ Installer/developer enablers

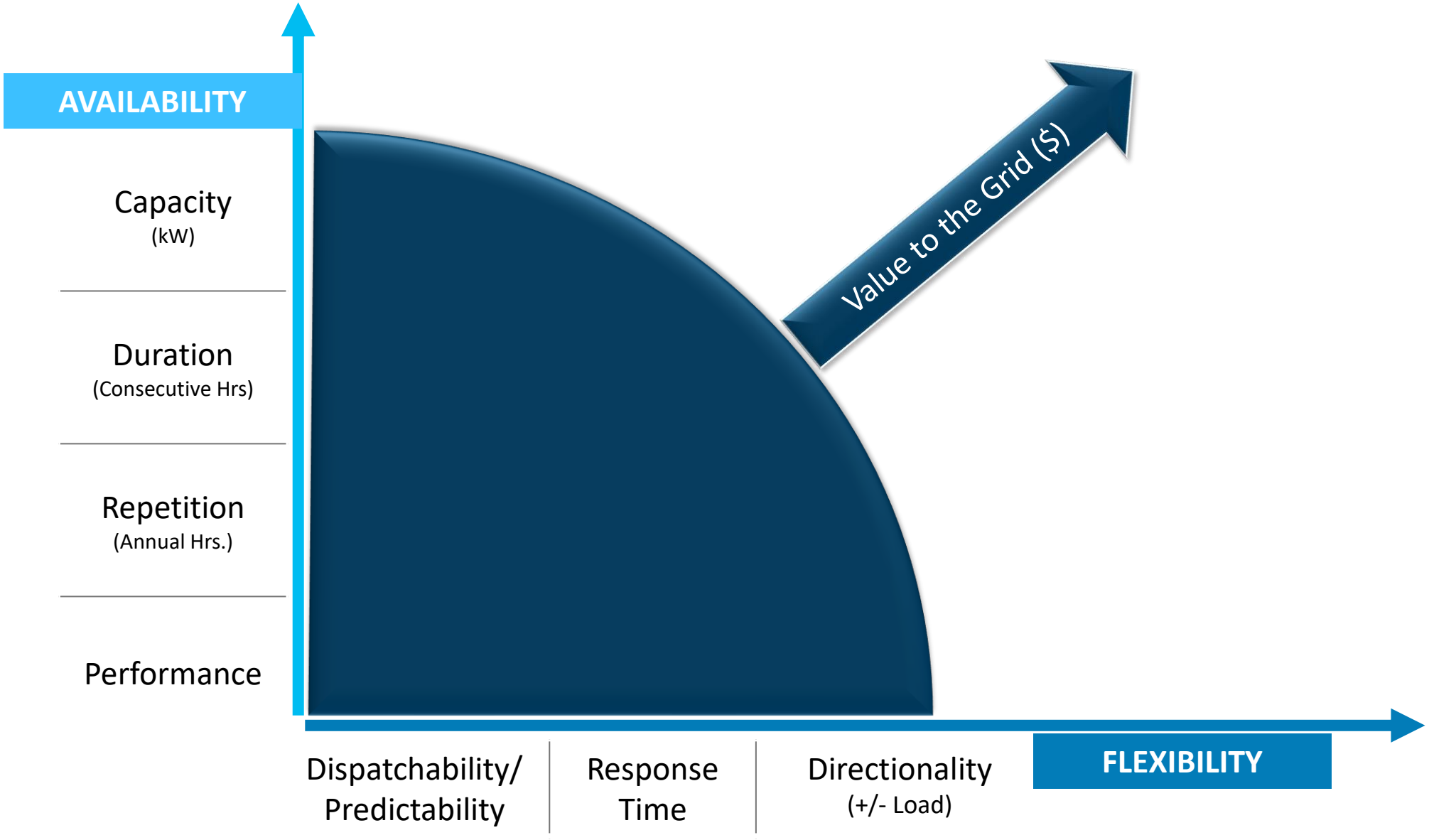
Value to the Grid



- ❑ Which signals materialize responses in each segment?
- ❑ What magnitude of response can be planned on?
- ❑ Are there patterns in behavior?
- ❑ How reliable are results across conditions, use cases, over time?

Deriving the Capacity Value

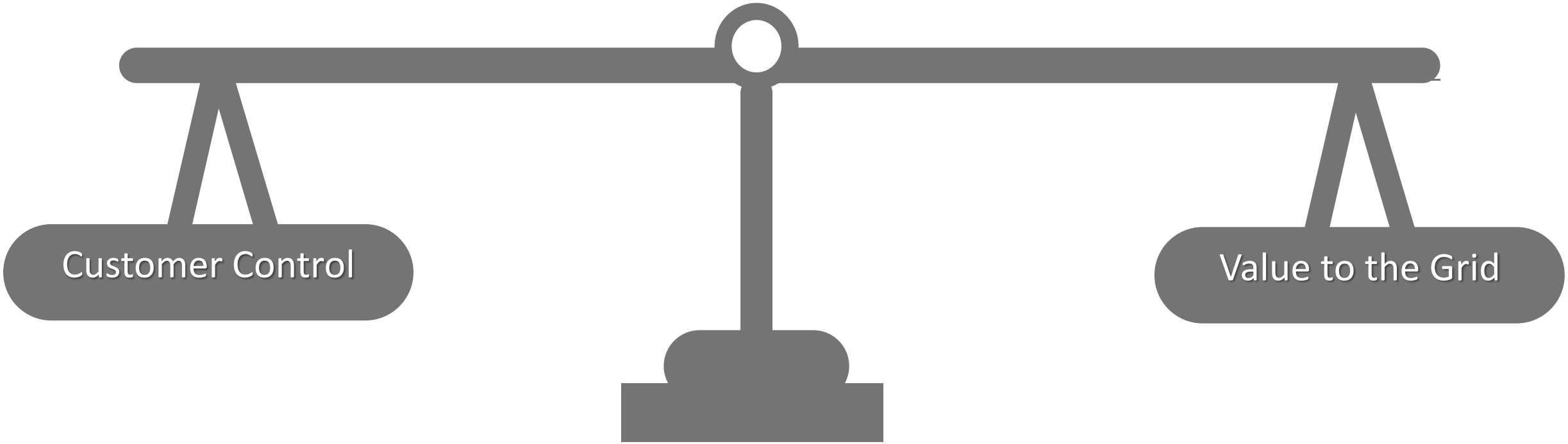
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Creating value with balanced program design

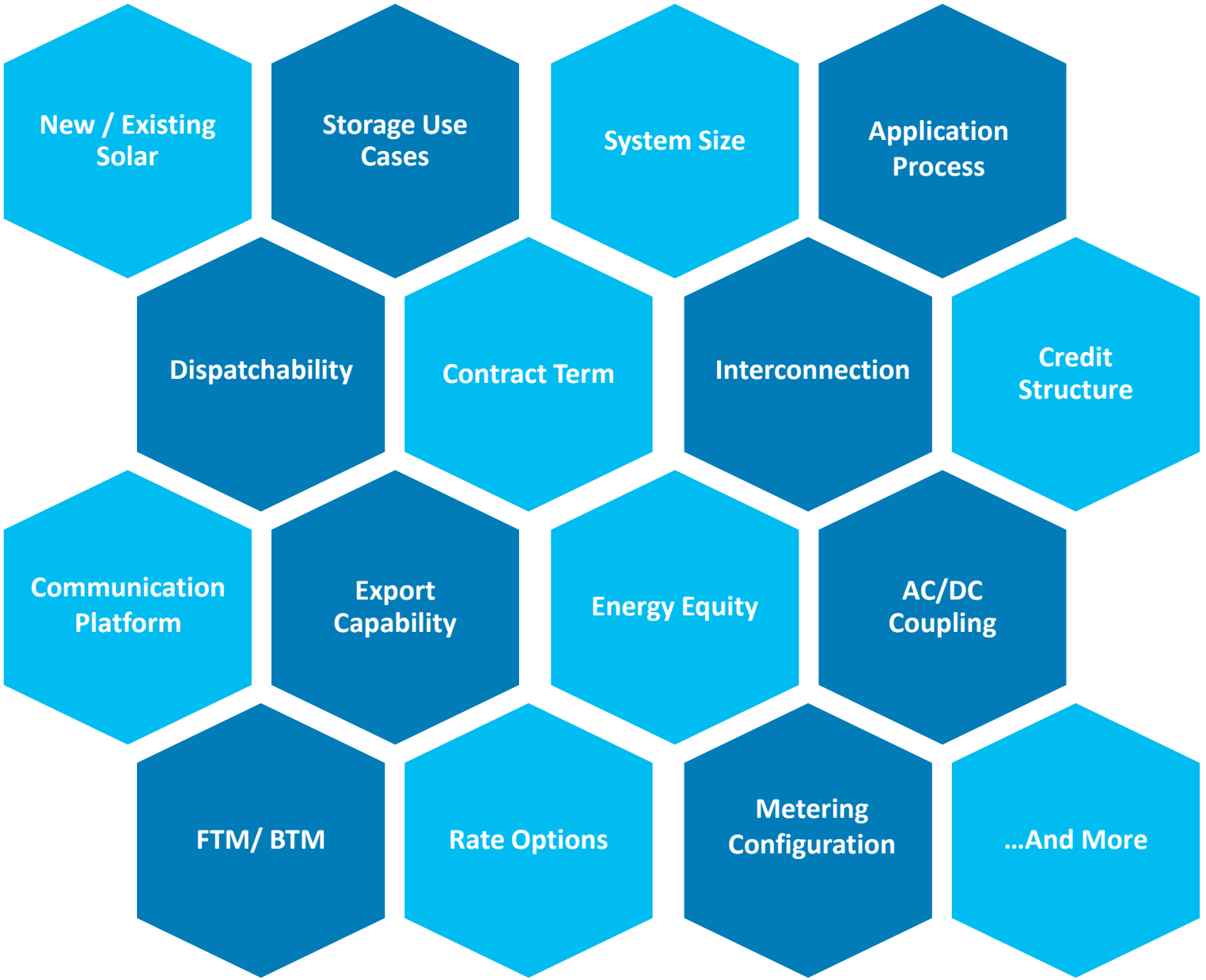
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Pilot Program Design Criteria				
Aligns Customer & Company Incentives	Efficient Program Administration	Value Stream(s) Stackable & Scalable	Consistent & Appropriate Valuation	Technology Agnostic & Risk Neutral



Solar Plus Storage Pilot Design Dimensions

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Residential and Small Commercial Solar and Storage Pilot Program Design Considerations

September 5, 2024

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Program Design Feedback Objectives

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Share additional design & implementation considerations



Solicit feedback on design and implementation priorities



Program Design Tenets:

- Customer-focused
- Appropriately values all benefits and costs
- Implementable

Distributed Energy Resource Management System (DERMS)

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Distributed Energy Resource Management System (DERMS)

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Grid DERMS is a centralized software tool designed to visualize, control and manage distributed energy resource (DER) devices in coordination with existing operations systems (e.g., ADMS, EMS).



DERMS Vendor Landscape*

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DER

Thermostats | Solar Inverters | Water Heaters | Electric Vehicles | Batteries | Heat Pumps | Microgrid

Program (Edge) DERMS

WeaveGrid
uplight
Itron
Q.CELLS
KRAKEN FLEX
GENERAC
Virtual Peaker
EnergyHub
emsysvpp

Centralized (Grid) DERMS

CAMUS
Schneider Electric
ORACLE
aspentech
SIEMENS
mPrest
GE VERNOVA
OATI

**Information in each category is listed for example only and is not intended to be an all-inclusive list.*

Residential and Small Commercial Solar and Storage Pilot Program Design Considerations

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Contract Duration Considerations

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No Long-Term Contract

- Limited capacity planning value
- Likely requires a pay for performance model



10+ Year Contract

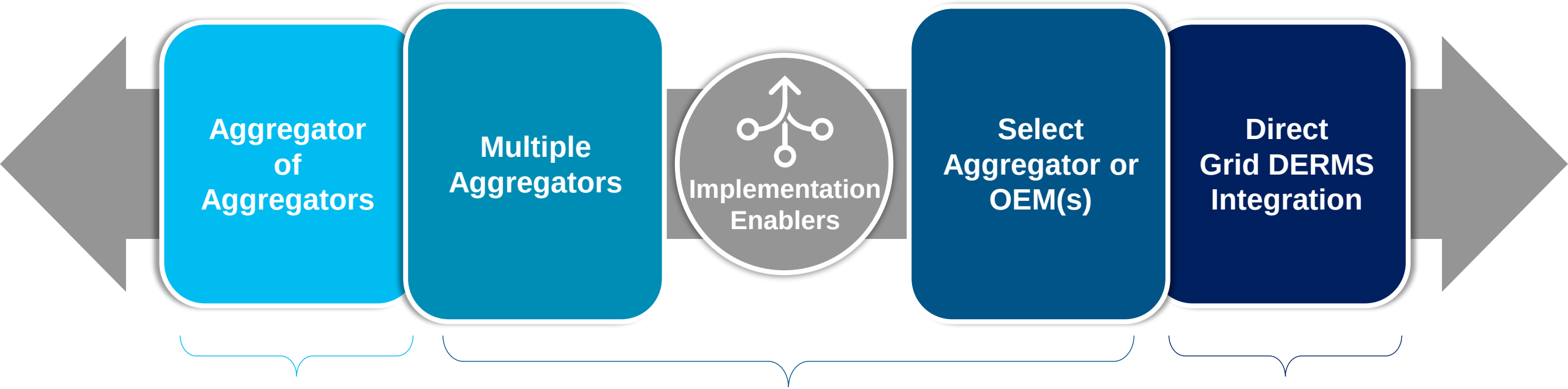
- Longer contracts provide more certainty and more capacity value
- Facilitates an upfront incentive model

Related Considerations

- Component warranties
- Property/Homeowner turnover
- O&M plan to ensure performance
- Changes in system needs

Implementation Options

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- Opens market for most OEM and device types
- Leverage existing devices and partners
- Quicker integration

- More defined requirements
- More available use cases
- Closer integration
- More customization

- Allows for grid edge aggregator for mass market scale
- Consider direct integration of larger scale resources in medium term

Availability & Dispatch Alternatives

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Potential Incentive Structures

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Upfront

+ Reduced out of pocket costs could increase customer adoption
– Potential risk for non-participants if value is less than expected
• Consider ongoing performance requirement
• Challenges associated with customer turnover

Ongoing

+ Monthly or Annual credit provides continued incentive for participation
+ Reduces risk to non-participants
– No mitigation for upfront cost hurdle for customer owned systems

Pay for Performance

+ Minimizes risk for non-participants
+ Equitable compensation which reflects available resource
– Less certainty in resource availability
• Frequency of payments (ex/ Annual or by event)

Bill Savings

• Customers capture value through reduced bills
• Align pricing design and underlying costs to appropriately capture system benefits

Hybrid

Combines elements of both upfront and performance-based incentives.

Capacity Valuation Process

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INPUTS

- Resource Characteristics
- Program Restrictions & Parameters

- Effective Load Carrying Capability
- Capacity Value
- Term Length

SYSTEM VALUE

OUTPUTS

Value of upfront incentive

+

Value of ongoing incentives

Customer Benefit

Customer Participation

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Considerations & Priorities for Customer Participation

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Customer Value and Resource Availability



Align on Program Tenets
Identify and prioritize program design components

Identify & Quantify Values
Appropriately value capacity and energy

Availability Guarantees
Optimize customer and utility use of resource at times that are valuable or necessary

New vs. Existing Systems
Specify criteria and configurations for new vs. existing systems

Timeliness & Ease of Participation



Timely Program Stand-up
Sync program implementation with new Customer Information System (CIS)

Ease of Application
Streamlined for residential customers and integrated with existing application platform & systems

Streamlined Interconnection
Clear system configuration options and interconnection

Appropriate Consumer Protections



Program Communications
Educate customers and installers on program mechanics and economics

Qualified Installers
Support broader efforts to ensure high quality workmanship and transparency in contracting with customers

Equitable Options to Participate in Program



Incentives for LMI Customers
Identify available federal/state/ local incentives that allow for greater adoption by LMI customers

Options Beyond S+S
Collaborate with external stakeholders to lower the cost of participation

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