Greentel : Objectives & Use Cases

Mission

Enabling a 21st Century Energy Economy brings New Hampshire affordable, reliable power via innovative solutions while creating new economic opportunities. Modernizing the electric grid to be more affordable, reliable, resilient and customer centric is key to this. We must bring together third parties, utilities and regulators to evolve the regulatory paradigm to achieve this goal - data is the common language or 'single source of truth' to enable this communication. The mission of the platform is to establish one common market foundation across the state of New Hampshire to empower all stakeholders to work and thrive together in a 21st Century Energy Economy.

Public Interest Objectives

Enabling a 21st Century Energy Economy accomplishes the following objectives:

- Ratepayer savings (reduced energy usage + rates)
- Grid Resiliency/Reliability/Efficiency
- Customer choice
- Economic development & Innovation
- Carbon emissions reduction & Environment protection

High-level Stakeholder Objectives

- **Customers** can access third party energy solutions that reduce energy usage, rates and ultimately bills
- **Third parties** can deploy innovative technologies, leverage new business models and create value for ratepayers - identify different third parties and solutions
- **Utilities** can integrate new technologies, leverage new business models while delivering affordable and reliable power.
- **Regulators** can conduct transparent, data driven oversight and drive regulatory innovation
- **Platform provides one common foundation/tool for third parties, utilities and regulators** to work together to accelerate grid modernization
- **Platform** provides an efficient and scalable way to digest and analyze data - API machine readable format

See use cases on next page.

Use Cases

Use Case 1: DERs developer can scope and deploy a solution that maximizes customer value while mitigating grid constraints and interconnection costs.

Name	DERs developer can scope and deploy a solution that maximizes customer value while mitigating grid constraints and interconnection costs.
Author	Nikhil Balakumar, Greentel
Description	To acquire customers, DERs developers need to accurately and efficiently design a DER solution that maximizes customer value while avoiding grid constraints. Customer data is needed to tailor the solution to their energy needs and system data is needed to understand how much of that value can be acquired while avoiding grid constraints and interconnection costs. Solutions could be re-sized based on grid constraints.
Step-by-step process – what happens?	1. Scope custom DER solution for customer that maximizes value 2. Optimize DER solution to anticipate and avoid grid constraints while minimizing interconnection costs 3. Optimize customer business case to maximize potential savings by selecting the best tariffs
Data fields required	
Step 1: Scope custom DER solution for customer that maximizes value	
Customer Data	• **Customer Class:** Ability to quickly screen location to determine whether it serves the developer's target customers (residential, commercial, agricultural, industrial). • **Interval Usage:** By analyzing interval usage data, developers can quickly screen potential customers to determine whether a DER solution is viable and if so, what specific DER solution and operational characteristics would most benefit a customer.
Stage 2: Optimize DER solution to anticipate and avoid grid constraints while minimizing interconnection costs	
Customer Data	• **Location:** Ability to determine which feeder the customer is on to identify potential grid constraints
System Data	• **Hosting Capacity:** Used in tandem with System Elements, developers can 1) Scope DER solution within hosting capacity to streamline interconnection and 2) Identify opportunities to provide services that increase hosting capacity.

Stage 3: Optimize customer business case to maximize potential savings by selecting the best tariffs	
Customer Data	• **Customer Bill:** Ability to compare historical bills and estimate savings from energy solution • **Customer Bill & Tariff:** Understand potential customer value of optimized DER solution using current tariff
Market Data	• **Tariffs:** Ability to assess and compare potential customer value of optimized DER solution on current vs. available tariffs.
Estimated Costs	
Estimated benefits	Ratepayer savings via energy usage reductions, economic development, customer choice, grid reliability
Policy changes?	
Project Risks	
Cybersecurity	
Assumptions/ Pre-conditions	

Use Case 2: DERs developer can scope and deploy a solution that maximizes customer value and; propose grid services to the utilities.

Name	DERs developer can scope and deploy a solution that maximizes customer value and propose grid services to the utilities
Author	Nikhil Balakumar, Greentel
Description	DERs developers need to accurately and efficiently design a DER solution that maximizes customer value while identifying opportunities to provide grid value. Customer and system data are needed to understand the potential customer and grid value. This allows developers to tailor a solution that captures as much of both value streams as possible and propose innovative solutions to meet utility planning needs.

Step-by-step process – what happens?	1. Identify customers who could benefit from DER solutions and determine potential customer value 2. Identify potential grid value opportunities at customer location and propose grid services solutions to support utility planning. 3. Identify the best business case scenario to maximize customer and grid value
Data fields required	
Step 1: Identify customers who could benefit from DER solutions and determine potential customer value	
Customer Data (Upon customer consent)	• **Interval Usage:** By analyzing interval usage data, developers can quickly screen potential customers to determine whether a DER solution is viable and if so, what DER solution would most benefit a customer. • **Customer Bill:** Use bill history to compare potential energy savings from DERs solutions
Market Data	• **Customer Tariff:** Understand value of DER solution under current tariff • **Tariffs:** Compare and identify best tariff to maximize customer value
Step 2: Identify potential grid value opportunities at customer location and propose grid services solutions to support utility planning.	
Customer Data	• **Customer Location:** Identify which customer feeder to analyze for grid value
System Data	• **System Elements:** Provides context on the physical attributes of the grid, such as the rated capacity of transformers and circuits as well as topology of distribution feeders, which leveraged alongside the system data below can be used to determine what services can be provided. • **Network Demand:** Used in tandem with system elements, developers can assess level of congestion and spare headroom which allows them to identify deferral opportunities to provide capacity services. • **Hosting Capacity:** Used in tandem with System Elements, developers can 1) Scope DER solution within hosting capacity to streamline interconnection and 2) Identify opportunities to provide services that increase hosting capacity.
Market Data	• **Distribution Investment Plan:** In emerging DER markets, DER developers can anticipate future opportunities for grid services, their estimated value and propose solutions to meet both short and long-term planning and operation needs. • **Distribution Network Value (Market Pricing/Tariff/NWA):** In mature DER markets with price signals, developers can calculate the value of current grid services available.
Stage 3: Identify the best business case scenario (DERs solution operational characteristics + Pricing) to maximize customer and grid value	

Customer + System + Market Data	• **Customer Value Analysis (Step 1)** • **System Value Analysis (Steps 2)** • **Distribution Network Value (Market Pricing/Tariff/NWA) & Bulk Power Network Value** • **Customer Tariffs** Developers can conduct a scenario analysis to identify the best business case to maximize customer and grid value. First, developers must combine the customer value and grid value analysis to optimize the DER solution scope to best meet both needs. Next, they can identify the best combination of tariffs to enable 1) bill reductions and 2) revenue streams from grid services.
Estimated Costs	
Estimated benefits	Ratepayer savings via energy usage and rate reductions, economic development, customer choice, grid reliability, grid resiliency
Policy changes?	
Project Risks	
Cybersecurity	
Assumptions/ Pre-conditions	

Use Case 3: Utilities can integrate and procure services from DER solutions in a scalable and reliable manner

Name	Utilities can integrate and procure services from DER solutions in a safe, efficient and reliable manner.
Author	Nikhil Balakumar, Greentel

Description	To integrate third party owned technologies safely and reliably, utilities need visibility into 1) upcoming and 2) interconnected projects by location to account for in distribution planning. In addition, utilities can gain access to proposals on how upcoming and existing DERs can provide grid services. Utilities need the latest DER data in all three of these areas to better inform integrated resource planning and identify opportunities for grid services/ratepayer savings.
Step-by-step process – what happens?	1. Track upcoming projects by location in pipeline queue 2. Monitor interconnected DERs assets by location 3. Receive proposals for DER grid services 4. Conduct DER inclusive integrated resource planning
Data fields required	
Step 1: Track upcoming projects by location in pipeline queue and streamline interconnection process	
DER Data	• **Interconnection Queue Order, Feeder, DER Solution Type, DER Load, DER Operational characteristics**
Step 2: Monitor interconnected DERs assets by location	
DER Data	• **Feeder/Location, DER Solution Type, DER Operational Characteristics, Interval Load/Storage**
Step 3: Receive proposals for DER grid services	
DER + System Data	• **DER grid services proposal:** Includes grid constraints that have been identified (system data) and solutions (DER data) to meet those needs.
Step 4: Leverage data to better inform distribution planning and identify grid services opportunities	
DER + System Data	• **All System and DER Data:** Using both data types, utilities can better conduct more accurate integrated resource planning.
Estimated Costs	

Estimated benefits	Ratepayer savings via energy usage and rate reductions, economic development, customer choice, grid reliability, grid resiliency
Policy changes?	
Project Risks	
Cybersecurity	
Assumptions/ Pre-conditions	