Distributed Generation

MSBA Story of Building Event

May 25, 2022

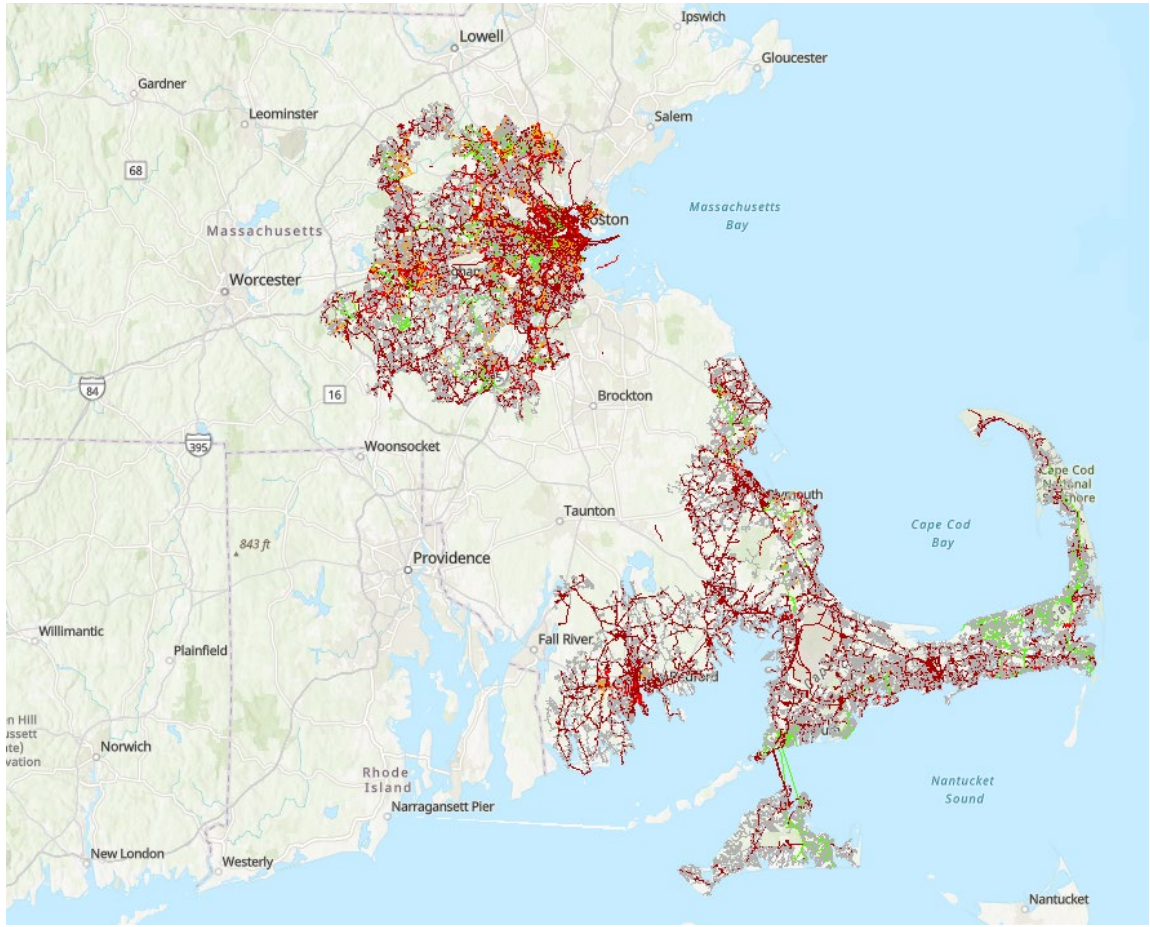
Agenda

- Customers asking for more info up front to determine ideal locations
  - 3 ways to investigate
    - Hosting Capacity Map
    - Grid Twin (Coming Soon)
    - Pre-Application
- Customers asking about potential costs for projects
  - Estimating tools on Eversource Website
- Customers faced with wait times in the queue that impacted their project timing (Both Distribution and Transmission)
  - Group Study provision and ASO Cluster Studies
- Some congested area's facing high cost of interconnection
  - Cost Sharing Proposal to DPU

Hosting Capacity Map

Type in address and get more info!

This map provides some guidance on an approximate value of Hosting Capacity measured in MegaWatts (MW) that may be accommodated onto a particular point on the distribution system. The map will be updated regularly, however; the information provided is non-binding and may not include all the projects in the queue. Proposed projects will need further analysis and may need detailed engineering studies to determine whether such distributed generation can be accommodated on the system.



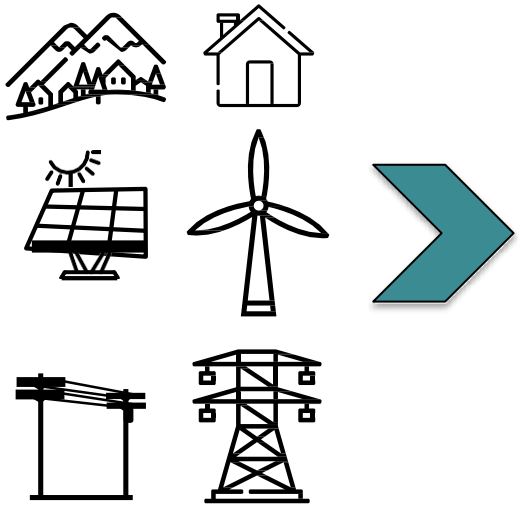
Eversource – Gridtwin Solar Developer Tool Coming soon!

- *What:* Interconnection software tools for solar developers
  - Mapping Tools (Hosting Capacity+)
  - Interconnection Analysis
  - Parcel Search
- *Where:* Eversource Massachusetts territory
  - Access web tool via: eversource.gridtwin.com
- *When*: Available July, 2022
- **Free-of-charge**

How does it work?

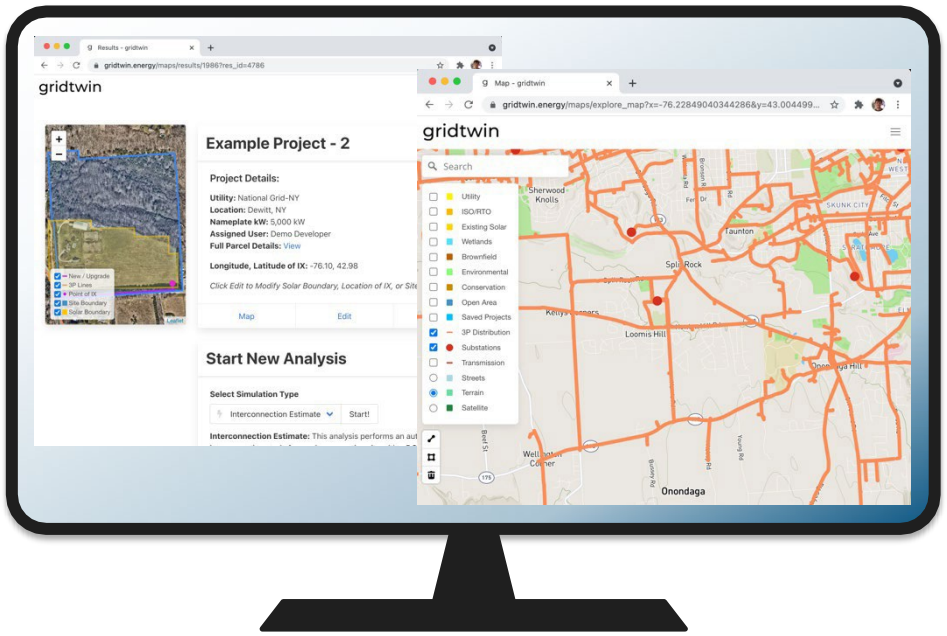
Public Data

- Parcel Data
- Network Information
- Land-use, wetlands, conservation, etc.

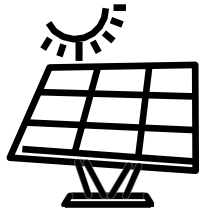


Utility Data

- Hosting Capacity Information
- Substation Areas
- Existing Solar
- Network Information

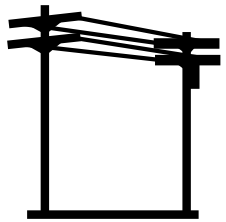


SaaS Platform for Electric Grid Analysis



Solar Developers

1. Search for ideal projects
2. See Interconnection cost



Utilities

1. Streamline interconnection
2. Plan investments

How to Get Started

1. Pre-Application Report (Apply in Power Clerk) – Low cost **Lots** of Great Info!

Nbr	Item	Response
1	Circuit voltage at the substation	13.8 kV
2	Circuit name/number	455-H5
3	Circuit voltage at proposed Facility	13.8kV
4.	Substation Name	STA_455 West Framingham
5.	Substation Transformer Rating	40 MVA
6.	Whether 3V0 is deployed or scheduled for deployment on the circuit or substation	No
7.	Whether the proposed facility is likely to be on the standard process track	This project is smaller than most that are on the Standard Track, so it may not be, depending on additional analysis after the application is filed
8.	Distribution Company is aware of an on-going ASO study for the proposed facility interconnection	No
9.	Whether an Affected System Operator has informed the Distribution Company that an ASO Study is required, or the Distribution Company is aware of an ongoing ASO Study for the proposed Facility interconnection location	No
10.	Nearest available feeder, the circuit rating and approximate circuit length from the proposed facility to the substation	Feeder: 455-H5 Approximate Circuit Length: 2.50 miles Circuit Rating: 490 Amps
11.	Is the service near the proposed Facility single phase or three phase	Three Phase
12.	If service near the proposed Facility is single phase, what is the distance from three phase service to the proposed Facility	
13.	Aggregate connected facilities (kW) on the circuit and on the same bus • PV Only • ESS Only • PV+ESS • Backup Generator	Online Total: 1,184.52 kW Online PV 1,161.84 kW Online PV & Battery 22.68 kW Pending Total: 306.33 kW Pending PV 288.12 kW
14.	Submitted complete applications of Facilities (kW) on circuit and on the same bus that have not yet been interconnected	
15.	Aggregated connected facilities (kW) on the substation transformer and submitted complete applications of the facilities (kW) that have not yet been interconnected	Transformer Online Total: 8,944.52 kW XFR_Online PV 2921.84 kW XFR_Online PV & Battery 22.68 kW XFR_Online Internal Comb 6000 kW Transformer Pending Total: 780.12 kW XFR_Pending PV 780.121 kW
16.	Proposed Facility served by an Area Network, a Spot Network or Radial System	Radial System
17.	Listing/Identification of feeders within ¼ mile of the proposed interconnection site through a snap-shot of GIS map or other means	See attachment
18.	Other Potential System Constraints or Critical items that may impact the proposed Facility.	Although a system impact study may not be required for a 480-kW solar array at the requested point of interconnection, please note that in some circumstances it might not be permitted without impact study to interconnect projects that are very close to 500kW based on the current electrical system characteristics/configuration and existing DG impact on the circuit.

Please note that other applicants who may be responding to an RFP may receive different Pre-Application Report results.

Eversource is receiving a high volume of large applications. There may be other applications in the queue which have not yet been deemed complete or assigned a circuit. Applications are processed in the order in which they are received. Studies and construction for applications ahead of yours must be completed first. This may delay the start of your studies and construction.

DISCLAIMER: Be aware that this Pre-Application Report is simply a snapshot in time and is non-binding. Systems conditions can and do change frequently.

Estimating Info – More Tools for Due Diligence

System Upgrade or Modification (15 - 35kV)	Typical Cost Range
Overhead (OH) Point of Interconnection (POI) / Point of Common Coupling (PCC)	$400,000
Underground (UG) POI/PCC 600A - Electrical - above 500kw	$650,000
Conductor upgrade/reconductoring (open wire - spacer)	$1 - 1.3 million per mile
Voltage conversion	$900,000 - 1.7 million per mile
Express feeder extension	$1 - 1.3 million per mile
New overhead line extension	$900,000 - 1.7 million per mile
Overhead line extension - single phase to three phase	$600,000 - 1.3 million per mile
Install/remove capacitor bank (600 - 1800kVAR)	$100,000
Install overhead primary metering	$50,000
Overhead switch installation (disconnects - loadbreak)	$50,000
Install line regulators	$50,000 - 200,000
Overhead transformer upgrade/installation (25 - 300kVA)	$10,000 - 20,000
Pad-mounted transformer upgrade/installation (75 - 2500kVA)	$20,000 - 50,000
3-phase riser pole installation	$20,000
Recloser upgrade/installation	$100,000 - 150,000
Pad-mounted switchgear installation	$200,000 - $250,000
Underground cable installation	$1.9 - 9.5 million per mile
Underground cable replacement	$1.9 - 9.5 million per mile

Once your ready to go

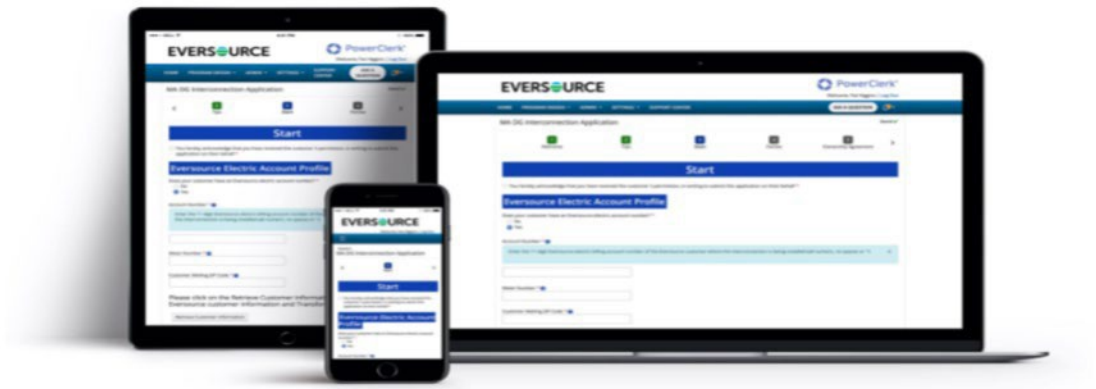
Power Clerk Distributed Generation Application

- https://www.eversource.com/content/wma/about/about-us/doing-business-with-us/builders-contractors/interconnections/massachusetts/application-to-interconnect

POWERCLERK

You will use our PowerClerk portal to submit and track your applications. This online tool brings you:

- The ability to easily upload and review documents associated with your projects
- Automatic communications to help you keep track of your projects
- A mobile-friendly user interface that can be used on most devices including your laptop or tablet



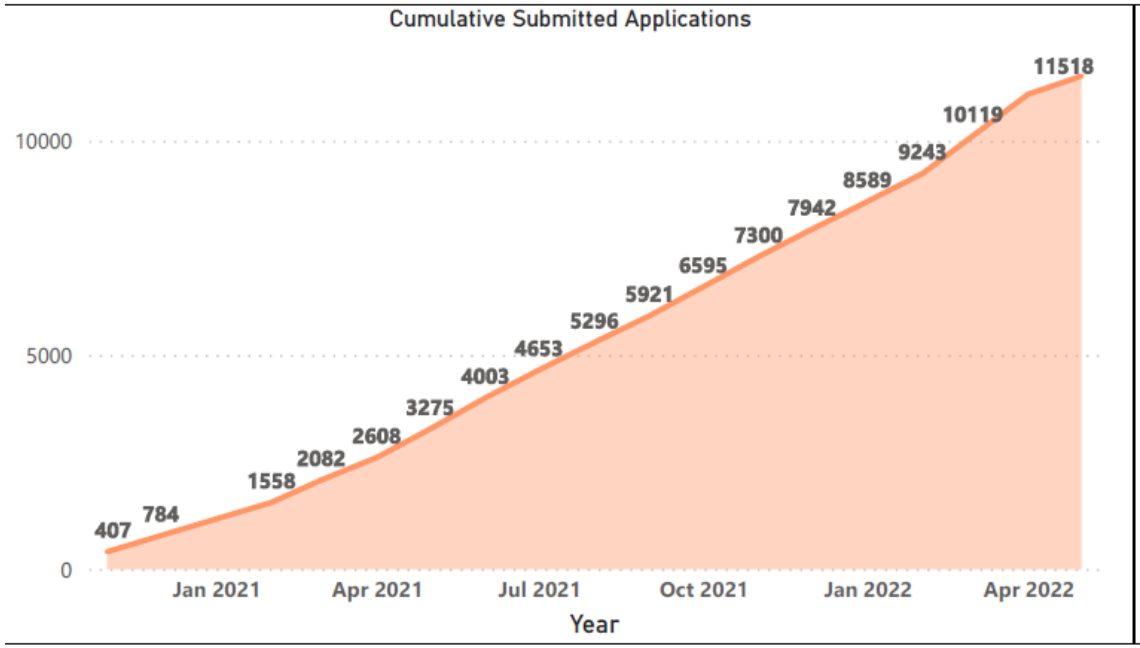
You will need an Eversource.com user ID to use PowerClerk. If you don't have an ID, you'll be prompted to sign up.

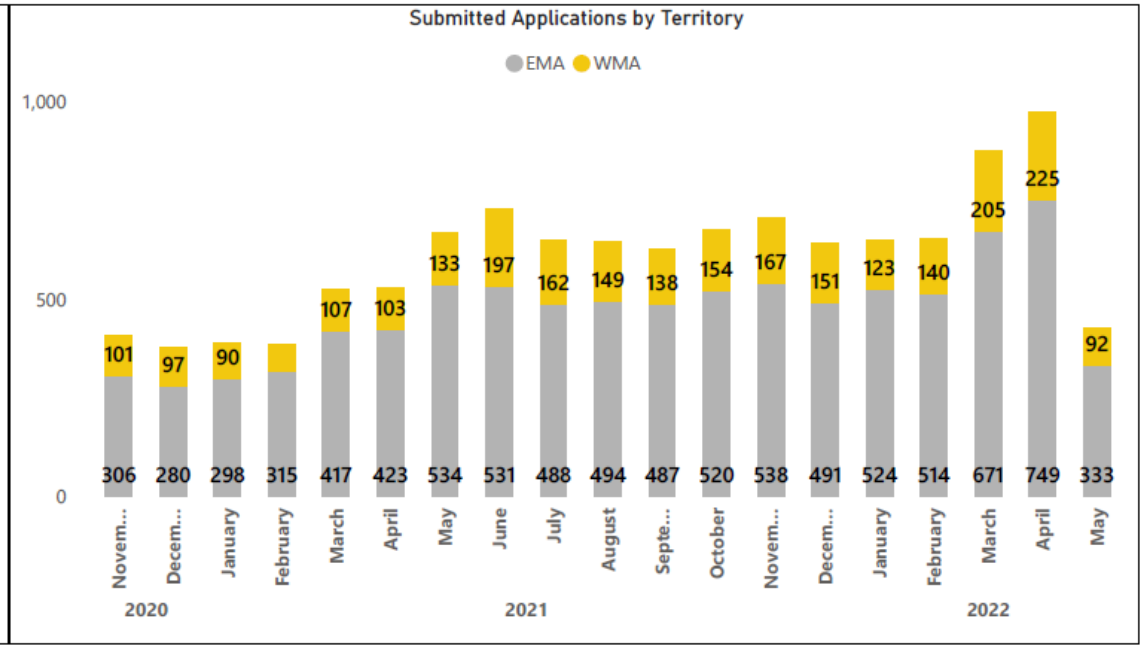
Timing – Managing Expectations Small Residential ~ 2 weeks for approval

➢ ***Simplified Portal Usage – Aggregate Metrics since Go-Live***

Statistics period: 11/01/20 – 05/11/22, 2021 (11:59 PM EST)

***Please note: Applications that are Cancelled / Withdrawn are not considered in below statistics/information.**



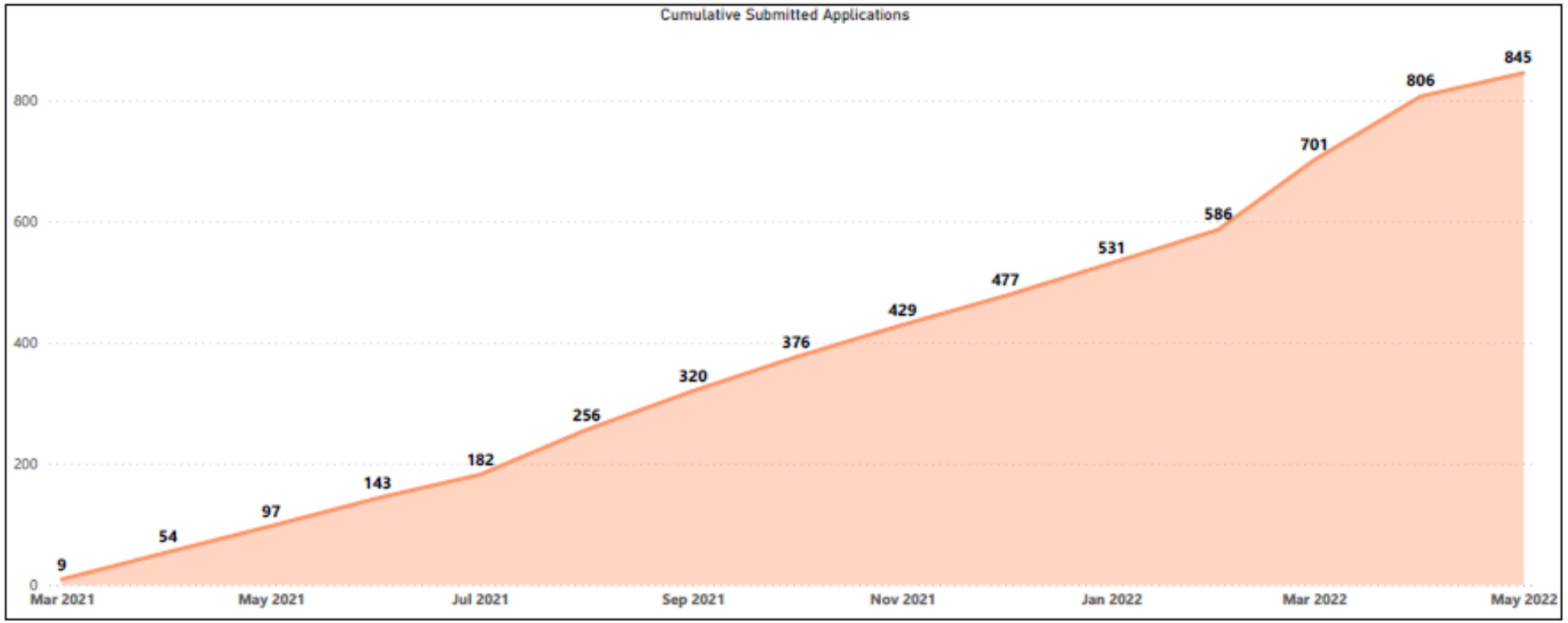


Large Projects – High Volume

➢ *Expedited / Standard Portal Usage – Aggregate Metrics since Go-Live*

Statistics period: 03/29/21 – 05/11/22, (11:59 PM EST)

*Please note: Applications that are Cancelled / Withdrawn are not considered in below statistics/information.



Timing – Managing Expectations
Large Solar Plus Storage

STANDARDS FOR INTERCONNECTION OF DISTRIBUTED GENERATION

Table 3 – Standard Process Time Frames (Note 1)

	Standard
Eligible Facilities	Any DG
Acknowledge Receipt of Application (Note 2)	(3 days)
Review Application for Completeness	10 days
Complete Review of All Screens	N/A
Complete Supplemental Review (if needed)	N/A
Complete Standard Process Initial Review	20 days
Send Impact Study Agreement	5 days
Complete Impact Study (if needed) (Note 3)	55 days
Complete Detailed Study (if needed) (Note 3)	30 days
Send Executable Agreement (Note 4)	15 days
Total Maximum Days (Note 5)	135 days (160 days if the application starts in the Expedited process)
Construction Schedule	By Mutual Agreement
Witness Test	See Section 3.4(n)

The Time Frames in Table 3 will be affected if ISO-NE determines that a system Impact Study is required. This will occur if the Interconnecting Customer's Facility is, or group of facilities are, equal to or greater than 5 MW and may occur if the Interconnecting Customer's Facility is greater than 1 MW.

Large Projects
Group Studies to Accelerate Applications

Eastern Massachusetts Group Study Areas

Area	Total Projects Invited	Total Opt Ins	Opt In MW
Cape Cod	61	59	72.4
Dartmouth-Westport	19	6	16.0
Freetown	6	6	23.3
Marion-Fairhaven	28	17	48.1
New Bedford	17	14	48.9
Plymouth	54	41	116.6

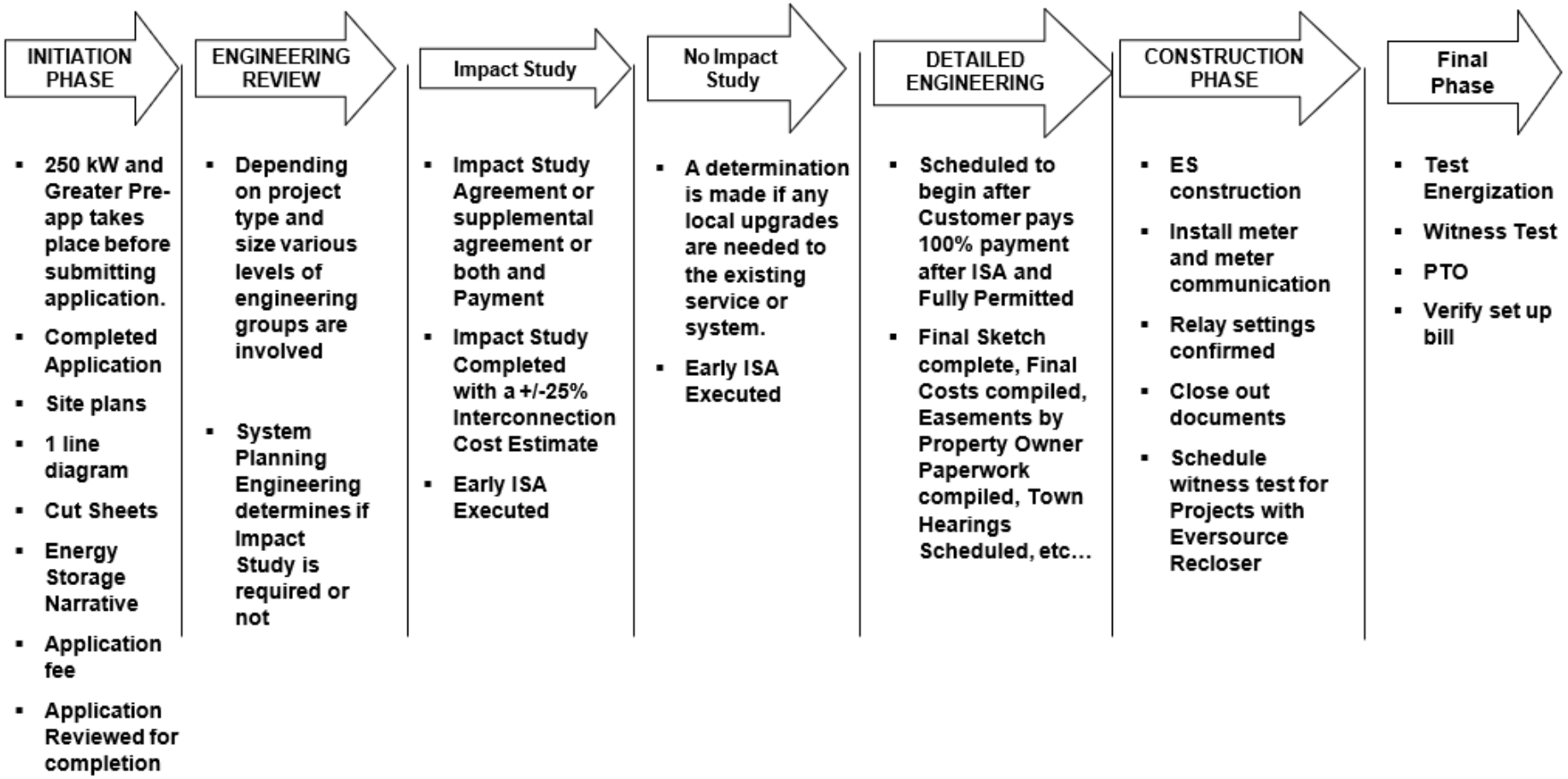
Western Massachusetts Group Study Areas

Area	Total Projects Invited	Total Opt Ins	Opt In MW
Plainfield-Blandford	8	3	13.7

Eversource Cost Sharing Proposal 20-75
To develop system upgrades to enable projects in queue and future development

High Level Process Flow

Studies to Ensure Safe and Reliable Interconnections and Electrical Service



THANK YOU!!

Contacts
Town Account Executive
Distributed Generation Manager – Brett.Jacobson@Eversource.com