

NY Solar Summit

Grid Ready Solar

June 10, 2015

Con Edison

Jim Skillman, Project Manager

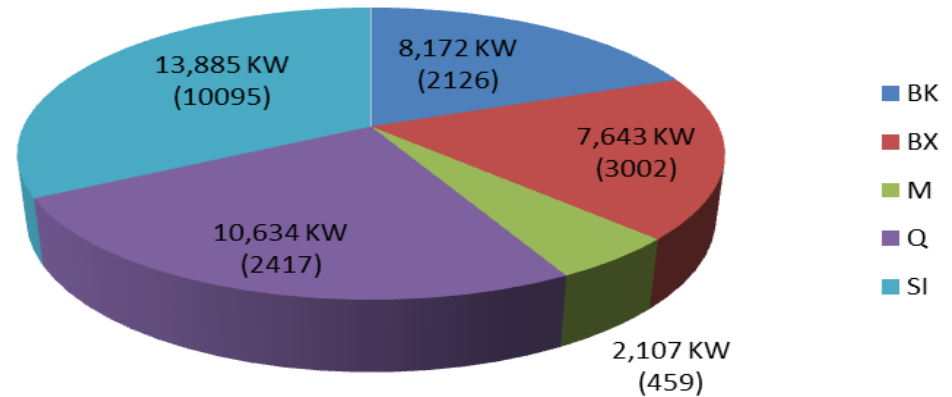
Distributed Generation Group

Solar in Con Edison Service Territory (NYC only)

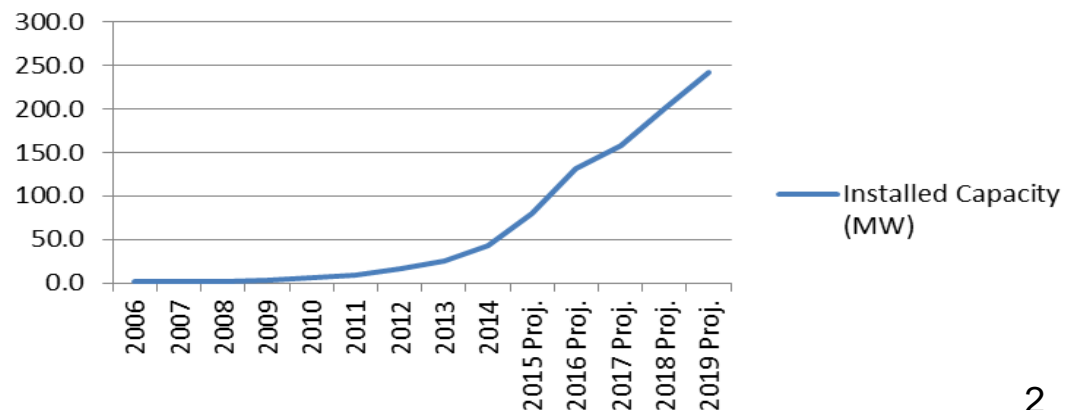
Drivers

- PV System Cost
- NY-Sun funding
- Third-party financing
- Pre-ITC rush
- Balance of System Cost Reductions

Total PV Capacity 2014 - NYC Only
(KW Added in 2014 alone)



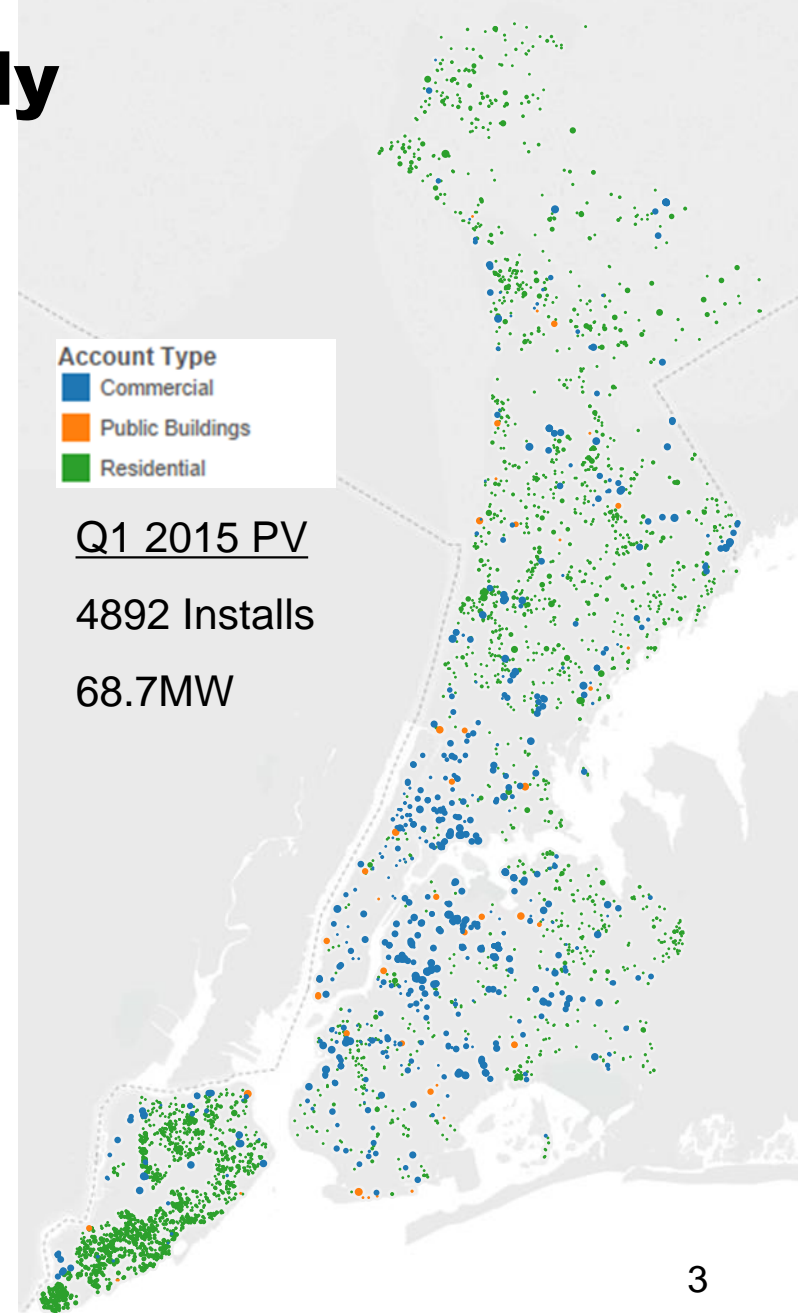
**Projected Installed Capacity:
NYC Solar (MW)**



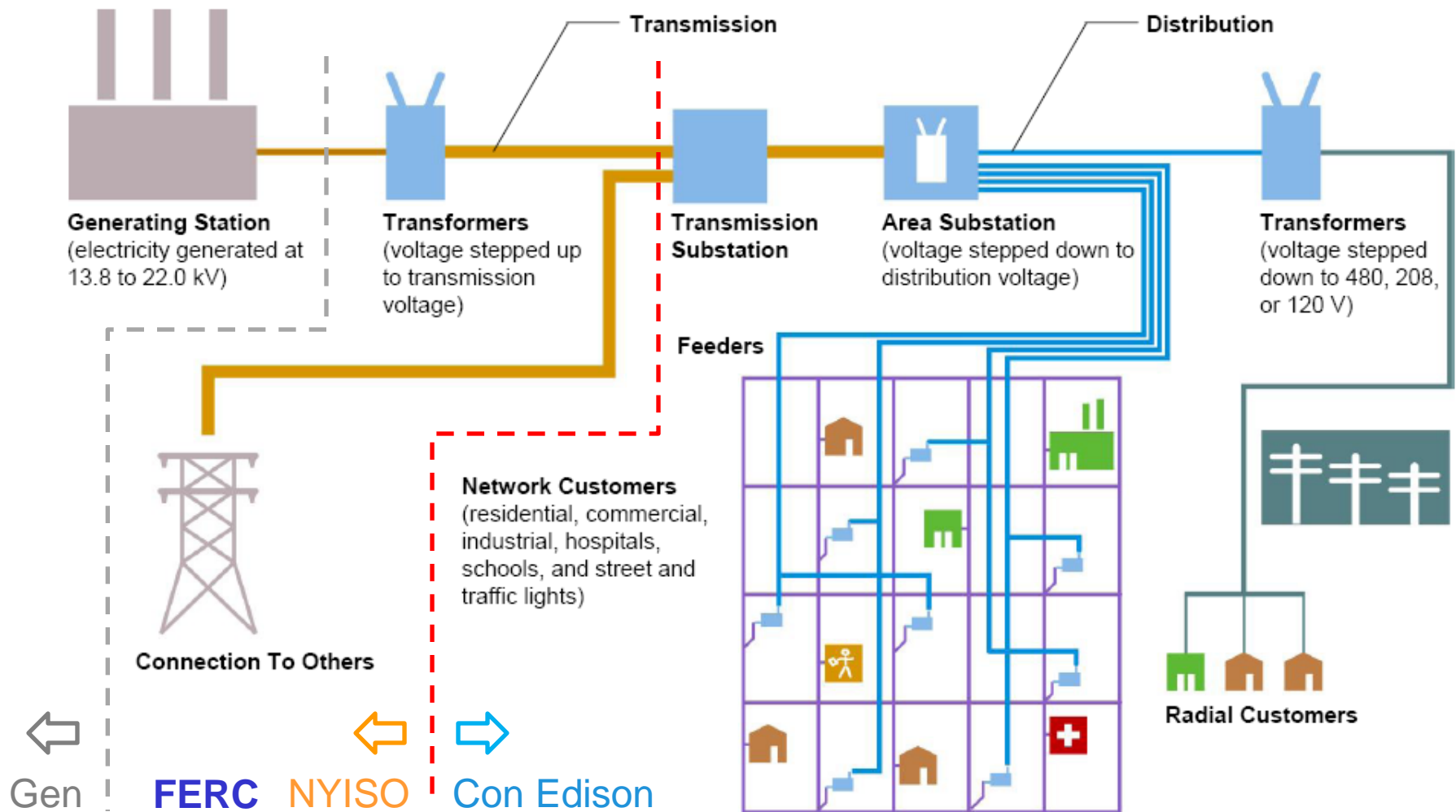
Con Edison and Grid Ready

Goals

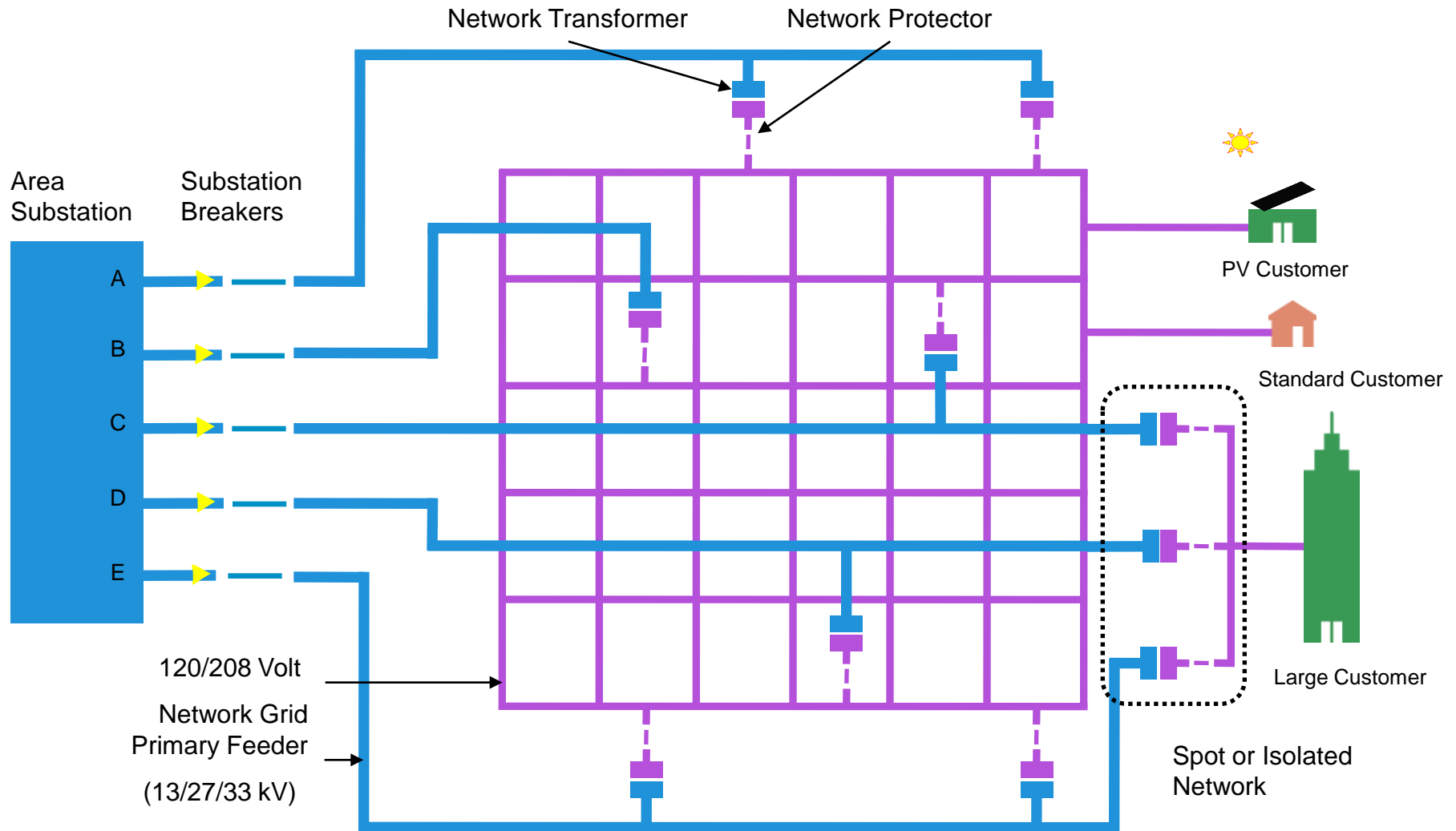
- Provide a Better Experience to Customers who Choose Solar
- Manage Installer Expectations
- Transparency into the Con Edison Technical Reviews
- Insight into the Complexity of the Con Edison Electric System



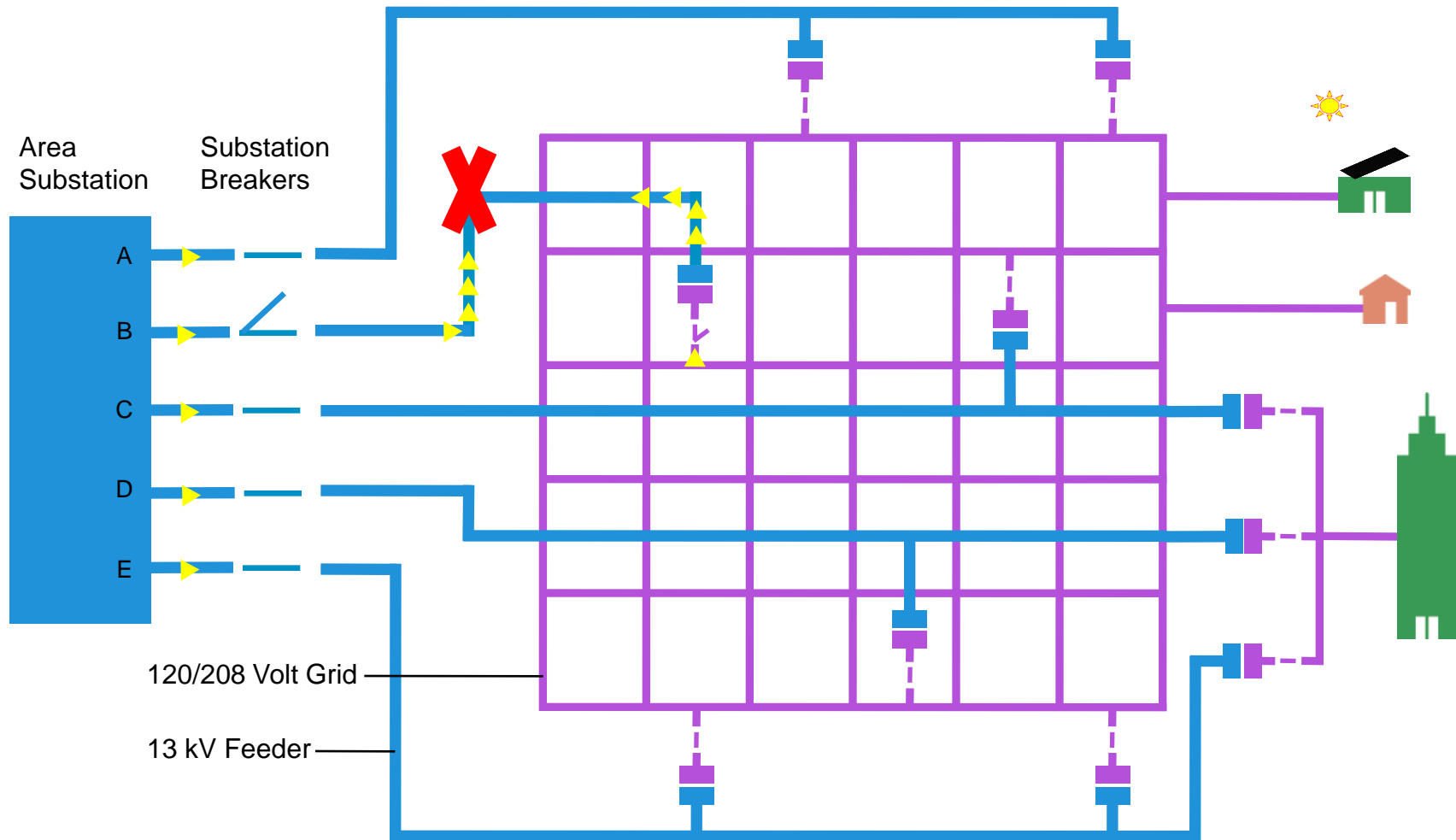
Con Edison Electric Distribution System



Typical Network Grid



Purpose of network protectors: *fault isolation*



Implications for PV Installations: *A Tale of 3 Warehouses*

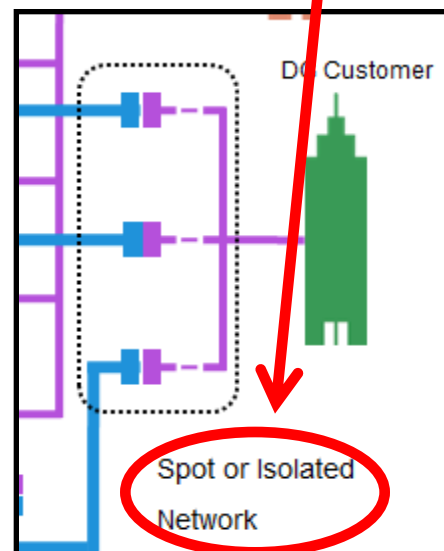
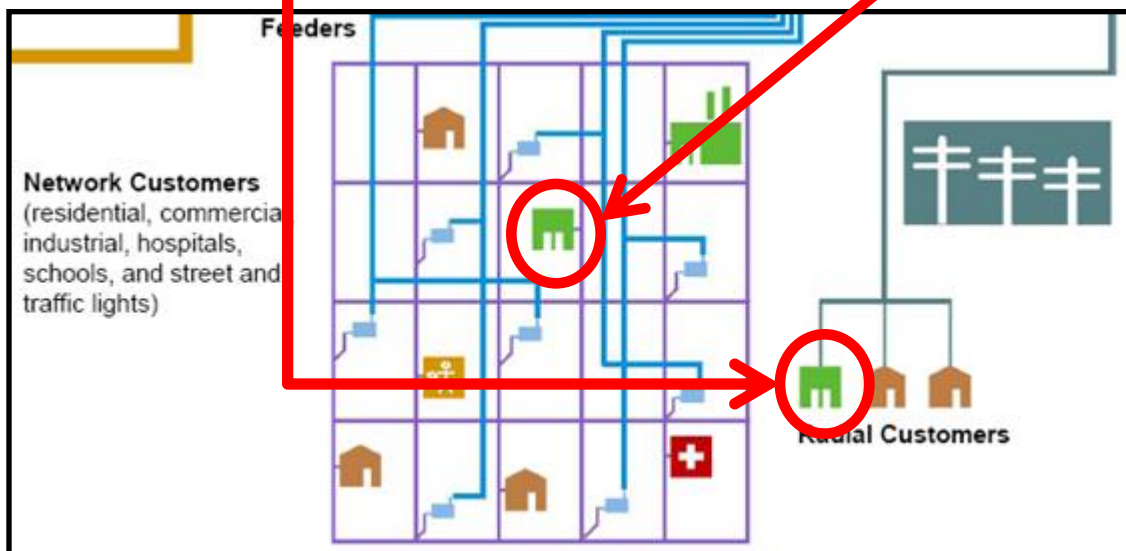
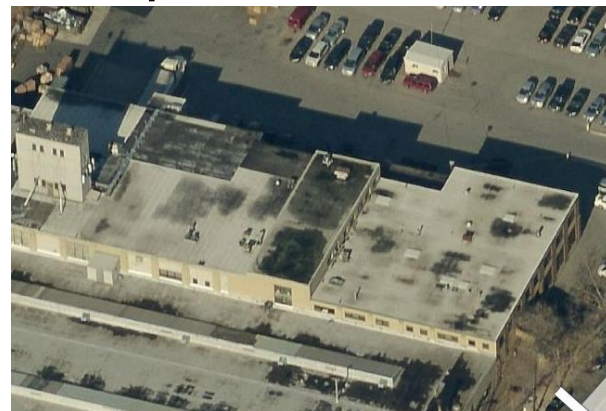
Radial



Network



Spot/Isolated

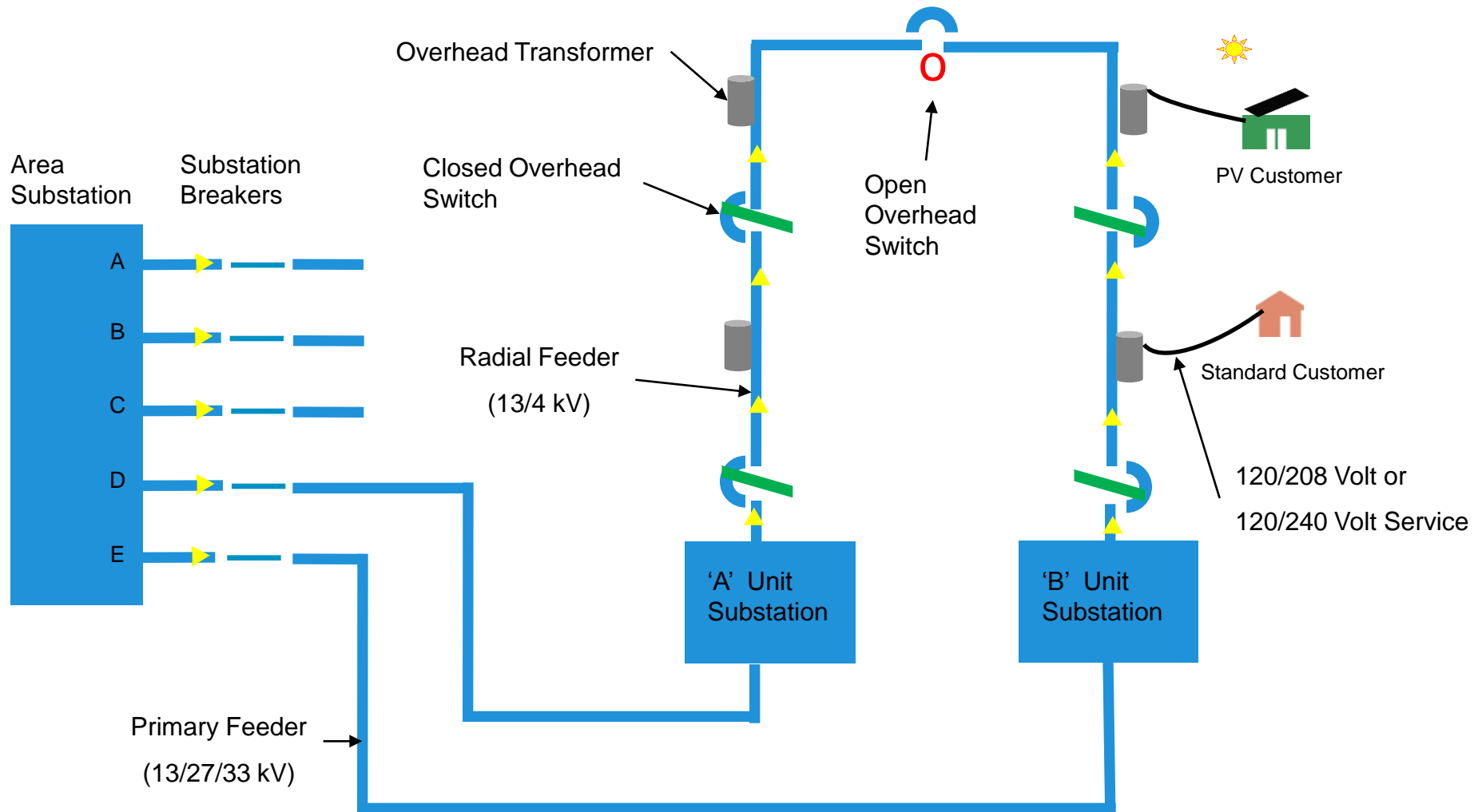


Radial Service

- Typically the Easiest for Export
 - No Network Protectors
 - 2-way Power Flow
- Potential Technical Issues
 - PV Penetration on the Feeder
 - Size of PV vs Service/Transformer
 - Switch or Re-Closer Issues
- Potential Operational Issues
 - Higher Rate of Storm Outages



Typical Con Edison Radial Network

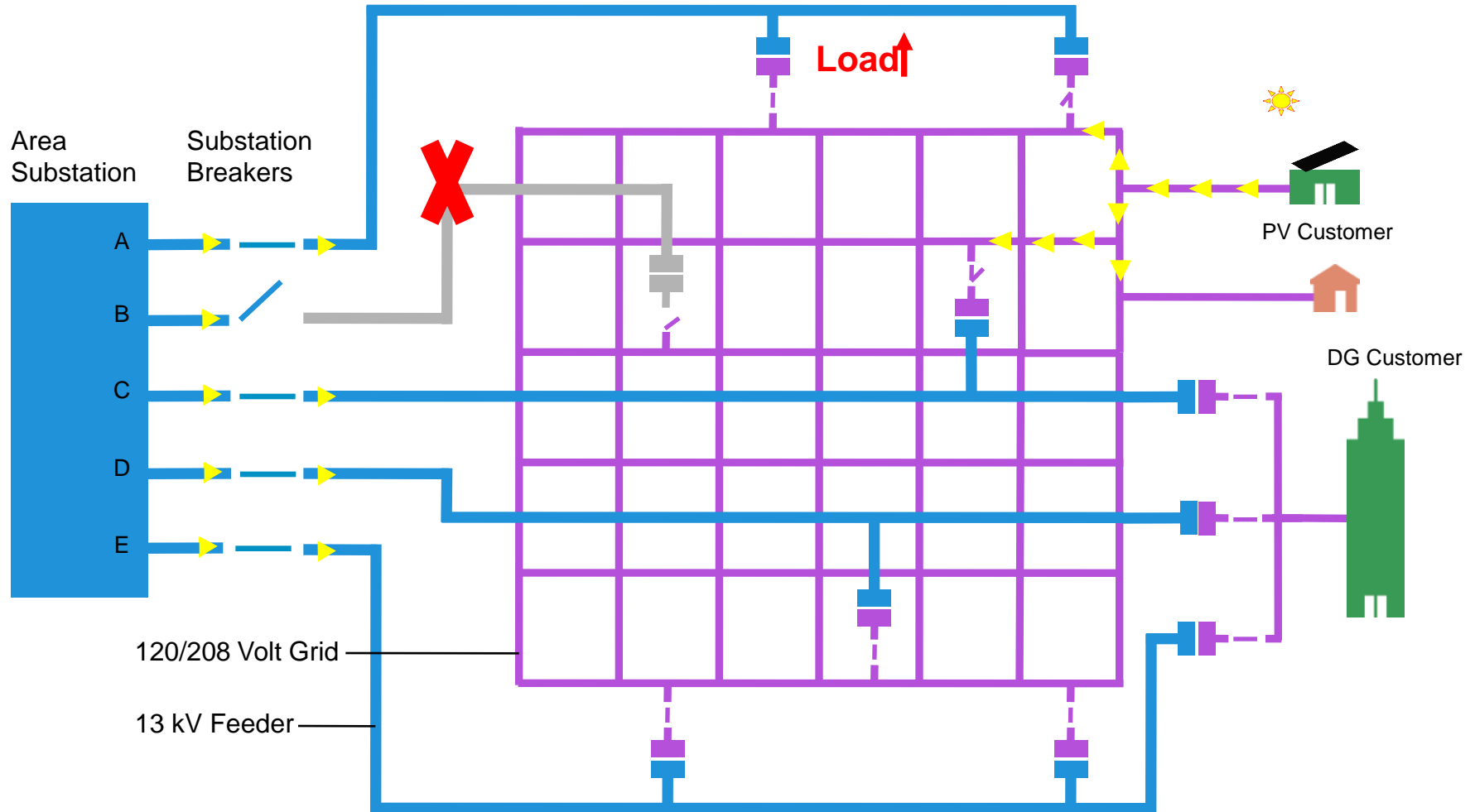


Network Grid Service

- Service from Manhole or Service Box Connection
- Export Capability Dependent upon Multiple Factors
 - PV Size vs Service Capacity
 - Network Loading (weekend)
 - Nearby Transformer Loading
- Upgrades to Service may require Street Work
 - Customer Cost & Increased Time

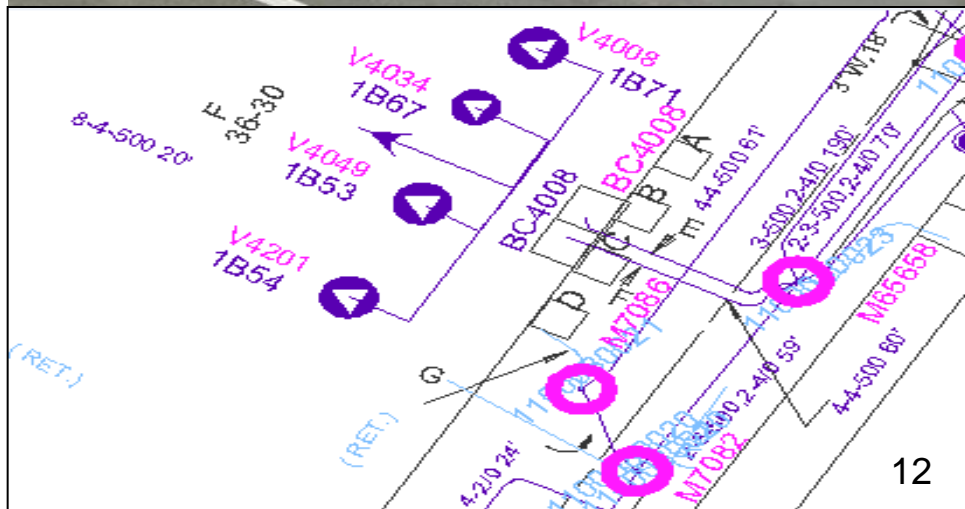
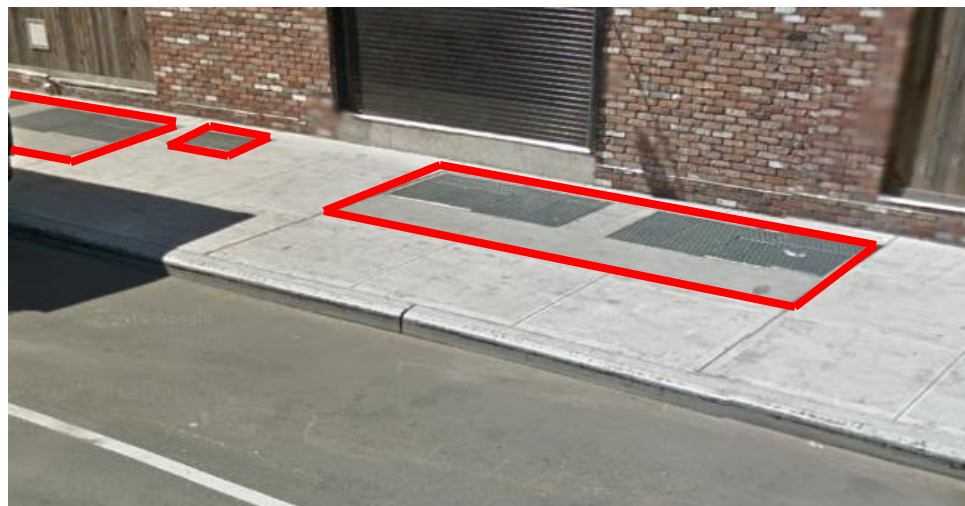


Network protector considerations: *Solar export with Low Network Load*

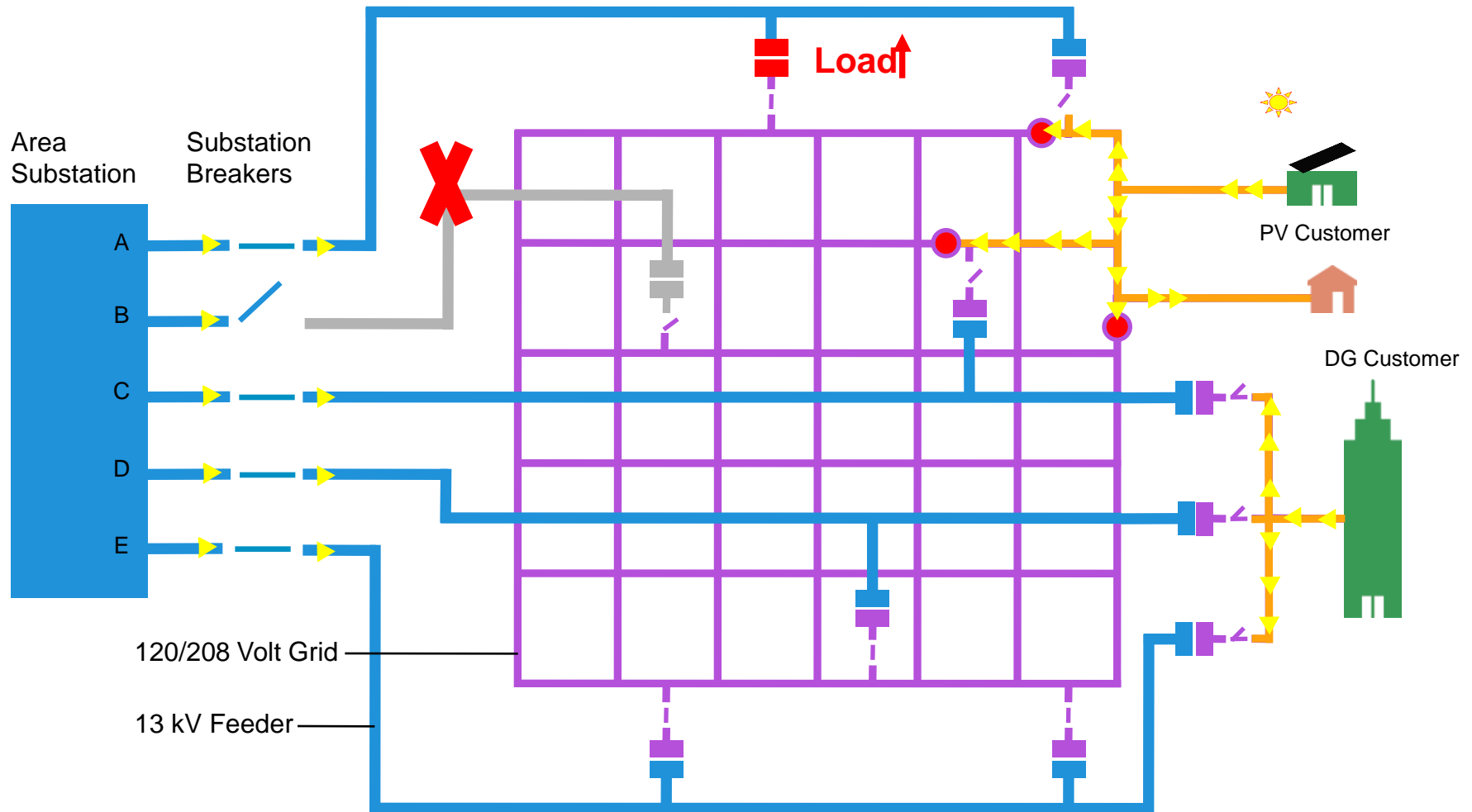


Isolated/Spot Network

- Typically Served Larger Load Buildings
- Cannot Accept Export without Major Upgrades
 - PV Pilot Program
 - Second Service (EDF)
- Highest Interconnection Costs to Accept Export
- Process would include 60-day CESIR Review



Network protector considerations: *spot or isolated networks*



Grid Ready Evaluation Concept

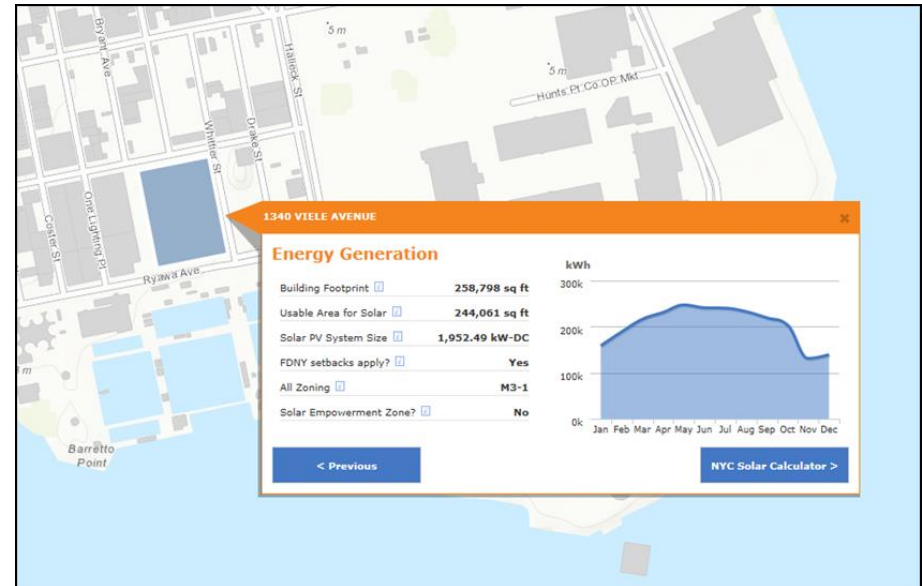
200 kW to 2 MW

- Step 1
 - Identify Service Type
- Step 2
 - Load vs PV Potential
- Step 3
 - Evaluate existing Service Capacity for PV Export
- Step 4
 - Identify Local Area Network's Minimum Load Condition



Grid Ready Opportunity Profiles: High, Medium and Low

- High Opportunity:
 - No grid, service, or interconnection upgrades.
- Medium Opportunity:
 - Possibly an interconnection issue.
 - Need deeper study to determine impacts.
- Low Opportunity:
 - Definitely will require upgrades and deeper study of impacts.



Desired Results

- Customers
 - Understand why project might not be technically feasible.
- Installers
 - Upfront indication of potential interconnection costs.
 - Create business deals with interconnection costs factored in.
- All users
 - Better understanding of Con Edison's complex electric system.



Thank you!

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