Game Changer Competitive Grant Program

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Agenda

1. Program Development
2. Goals
3. Criteria
4. Project Examples

Program Development

Table 1.1. Technology Readiness Levels used in this Assessment

Relative Level of Technology Development	Technology Readiness Level	TRL Definition	Description
System Operations	**TRL 9**	Actual system operated over the full range of expected conditions.	Actual operation of the technology in its final form, under the full range of operating conditions. Examples include using the actual system with the full range of wastes.
System Commissioning	**TRL 8**	Actual system completed and qualified through test and demonstration.	Technology has been proven to work in its final form and under expected conditions. In almost all cases, this TRL represents the end of true system development. Examples include developmental testing and evaluation of the system with real waste in hot commissioning.
	TRL 7	Full scale, similar (prototypical) system demonstrated in a relevant environment.	Prototype full-scale system. Represents a major step up from TRL 6, requiring demonstration of an actual system prototype in a relevant environment. Examples include testing the prototype in the field with a range of simulants and/or real waste and cold commissioning.
Technology Demonstration	**TRL 6**	Engineering/pilot scale, similar (prototypical) system validation in a relevant environment.	Representative engineering scale model or prototype system, which is well beyond the lab scale tested for TRL 5, is tested in a relevant environment. Represents a major step up in a technology's demonstrated readiness. Examples include testing a prototype with real waste and a range of simulants.
Technology Development	**TRL 5**	Laboratory scale, similar system validation in relevant environment.	The basic technological components are integrated so that the system configuration is similar to (matches) the final application in almost all respects. Examples include testing a high-fidelity system in a simulated environment and/or with a range of real waste and simulants.
	TRL 4	Component and/or system validation in laboratory environment.	Basic technological components are integrated to establish that the pieces will work together. This is relatively "low fidelity" compared with the eventual system. Examples include integration of "ad hoc" hardware in a laboratory and testing with a range of simulants.
Research to Prove Feasibility	**TRL 3**	Analytical and experimental critical function and/or characteristic proof of concept.	Active research and development is initiated. This includes analytical studies and laboratory scale studies to physically validate the analytical predictions of separate elements of the technology. Examples include components that are not yet integrated or representative. Components may be tested with simulants.
Basic Technology Research	**TRL 2**	Technology concept and/or application formulated.	Invention begins. Once basic principles are observed, practical applications can be invented. Applications are speculative, and there may be no proof or detailed analysis to support the assumptions. Examples are still limited to analytic studies.
	TRL 1	Basic principles observed and reported.	Lowest level of technology readiness. Scientific research begins to be translated into applied research and development (R&D). Example might include paper studies of a technology's basic properties.

Program Development

SEO Program	TRL Range	Available Funding	Award Cap	SEO Cost Share
MEA Game Changer 1.0/1.5 Projects	9*	$1.9M (CY12/13)	$250,000	Max 50% Avg. 1.0 = 20% Avg. 1.5 = 29%
NYSERDA Advanced Clean Power Technologies - Feasibility Assessment	~1-2	$10.3M (CY12/13)	$100,000	Max 75%
NYSERDA ACPT - Early State Product Dev.	~3-5		$200,000	Max 50%
NYSERDA ACPT - Product Dev. (*in-state*)	~4-6		$500,000	Max 50%
NYSERDA ACPT - Demonstration Project	~7-9		$750,000	Max 50%

Goals

- Support deployment of “market-leading” technologies
- Mitigate additional cost (risk) of installation
- Evaluate efficacy of technologies
- Economic development

Evaluation Criteria

- Increase in productivity
- Potential to be cost-effective
- Market potential and impact
- Visibility and ability to be replicated
- Cost-share
- Performance measurement and analysis
- Project viability and reasonableness

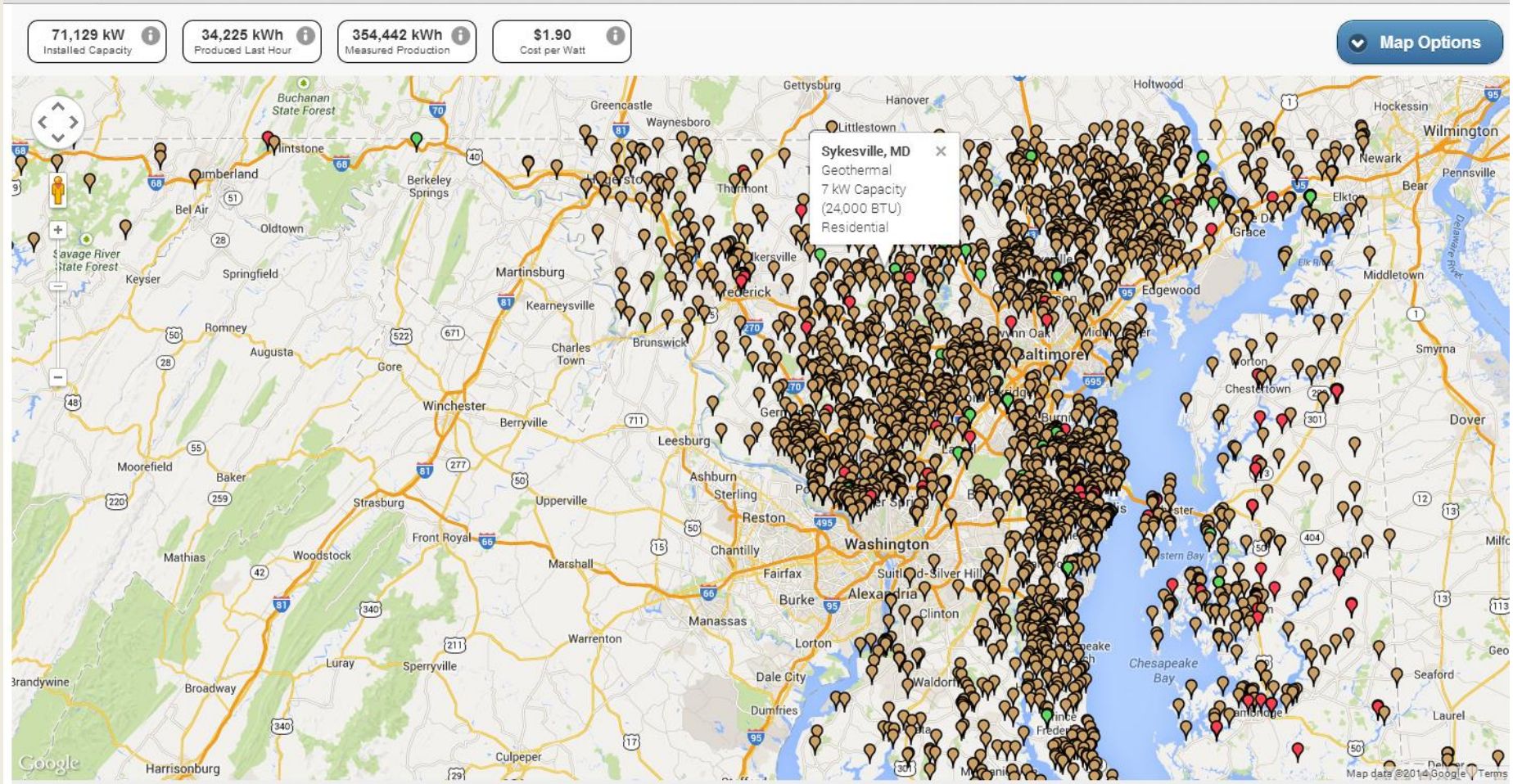
Solar Microgrid

Glazed Polymeric SWH on Multifamily Housing

Solar-Powered EV Charging

Solar-Powered EV Charging

Commercial Geothermal Finance



Geothermal for Living Building Challenge

Current Projects

- Both winners were focused on residential, distributed generation
- Strong concepts, ready to implement
- Result in real, installed projects
- Will reduce installation time (Infinite Invention) and provide valuable information on solar plus storage - leasing and how to access additional value streams (Astrum Solar)