Commercialization and Deployment at NREL

June 8, 2010

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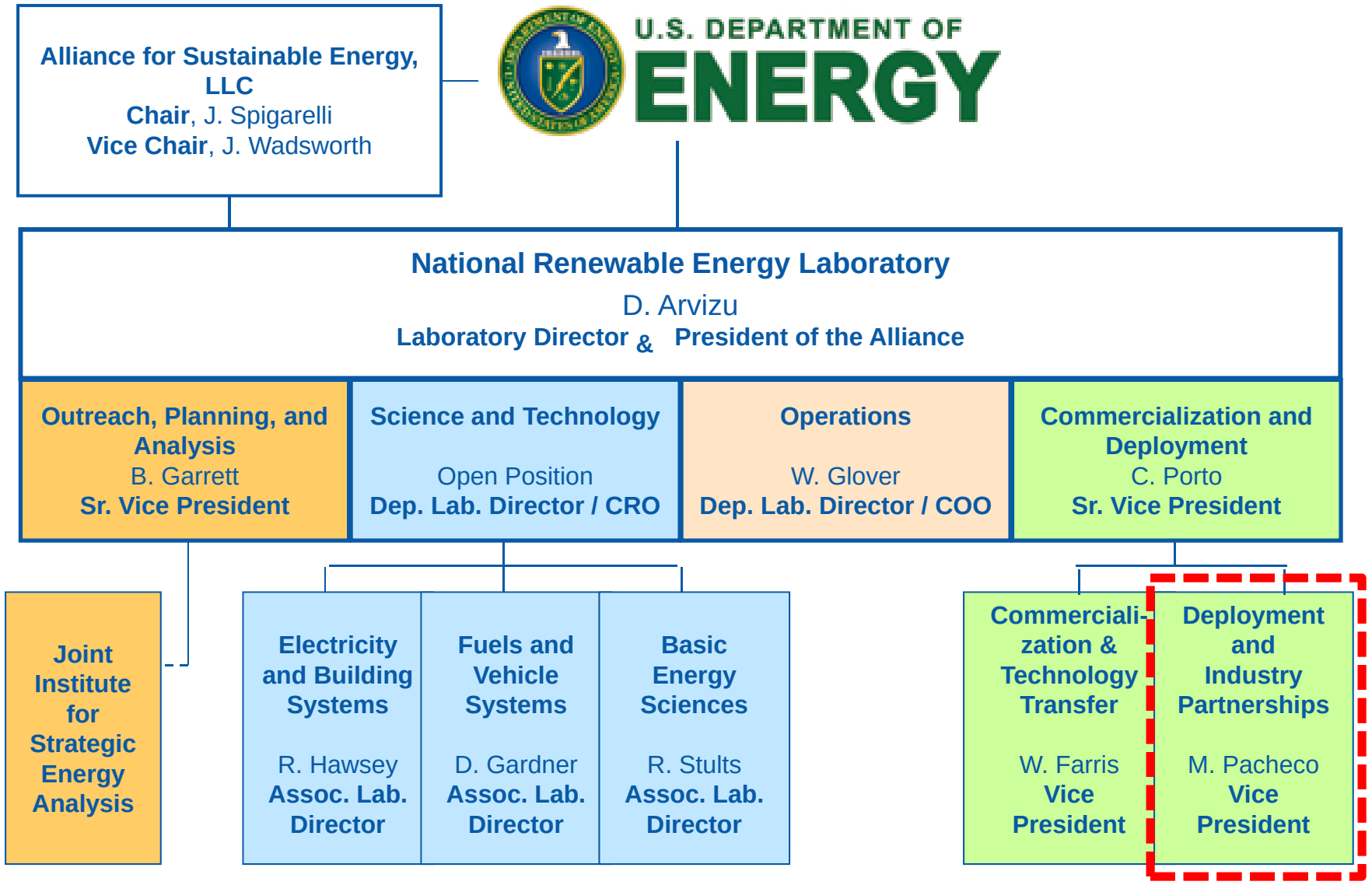
How NREL is Organized



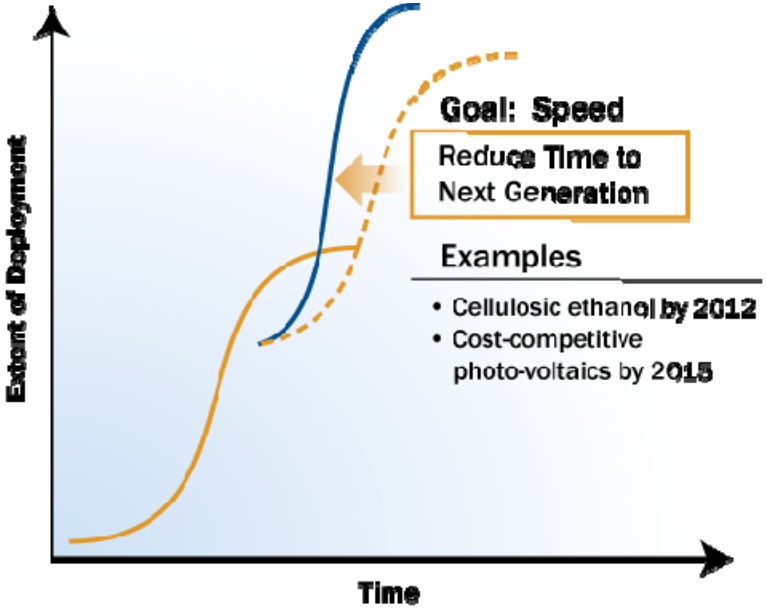
NREL Distinction:

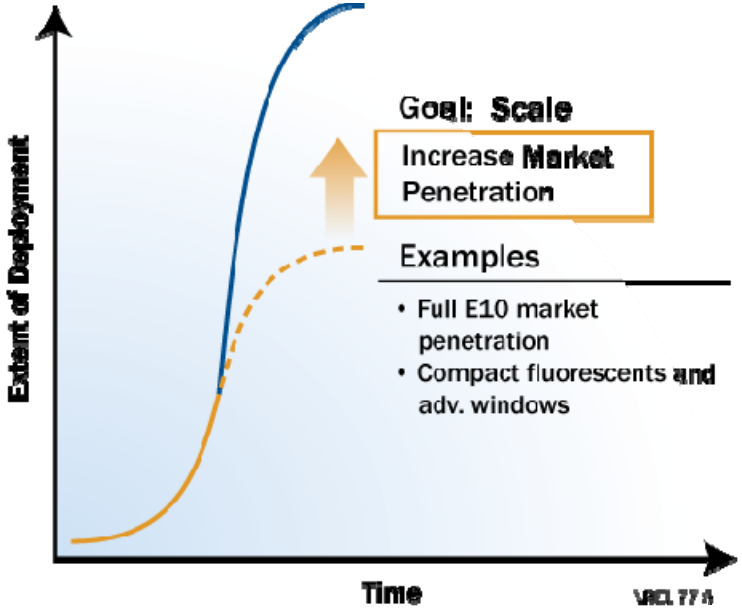
Commercialization

Accelerate the availability (speed) of ***next generation*** technologies

Deployment

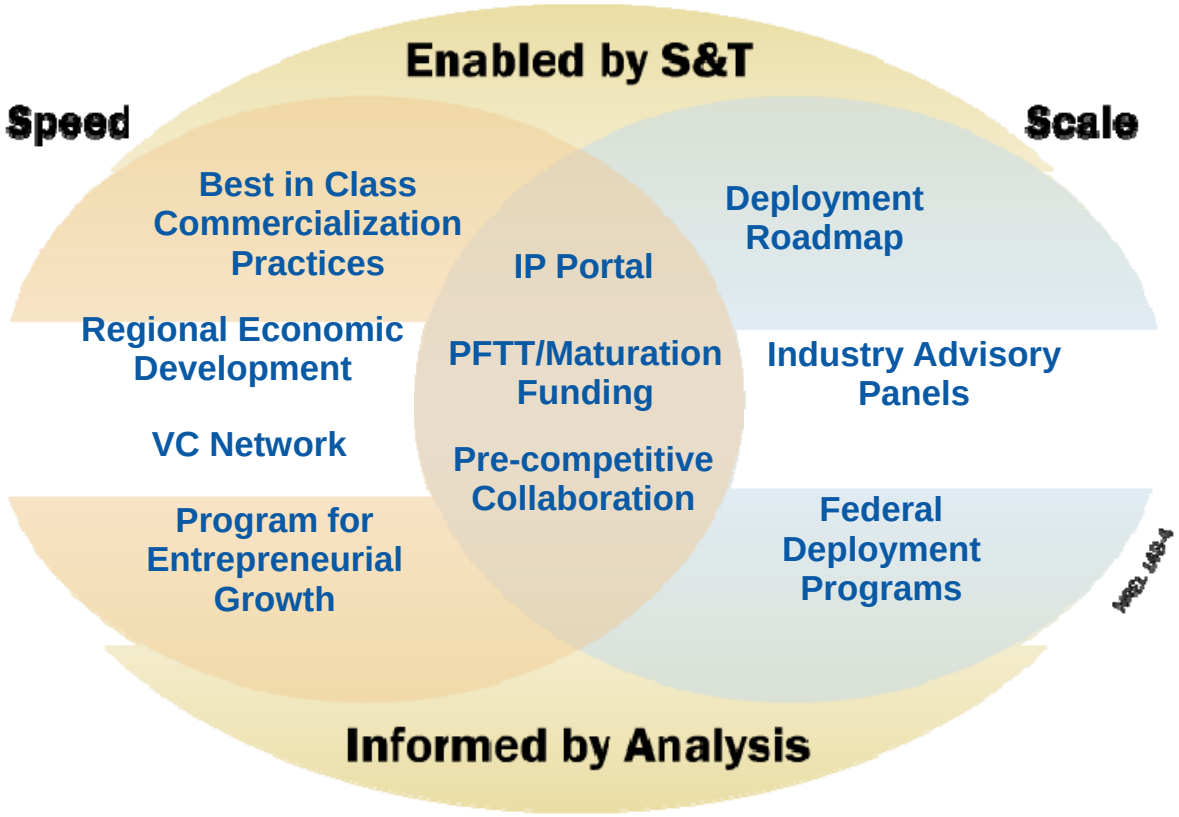
Maximize the deployment (scale) of ***current generation*** technologies





Approaches to Accelerate Adoption

- Achieve *Speed & Scale*
- Leverage Federal Deployment Programs
- Strategic Engagement with Industry



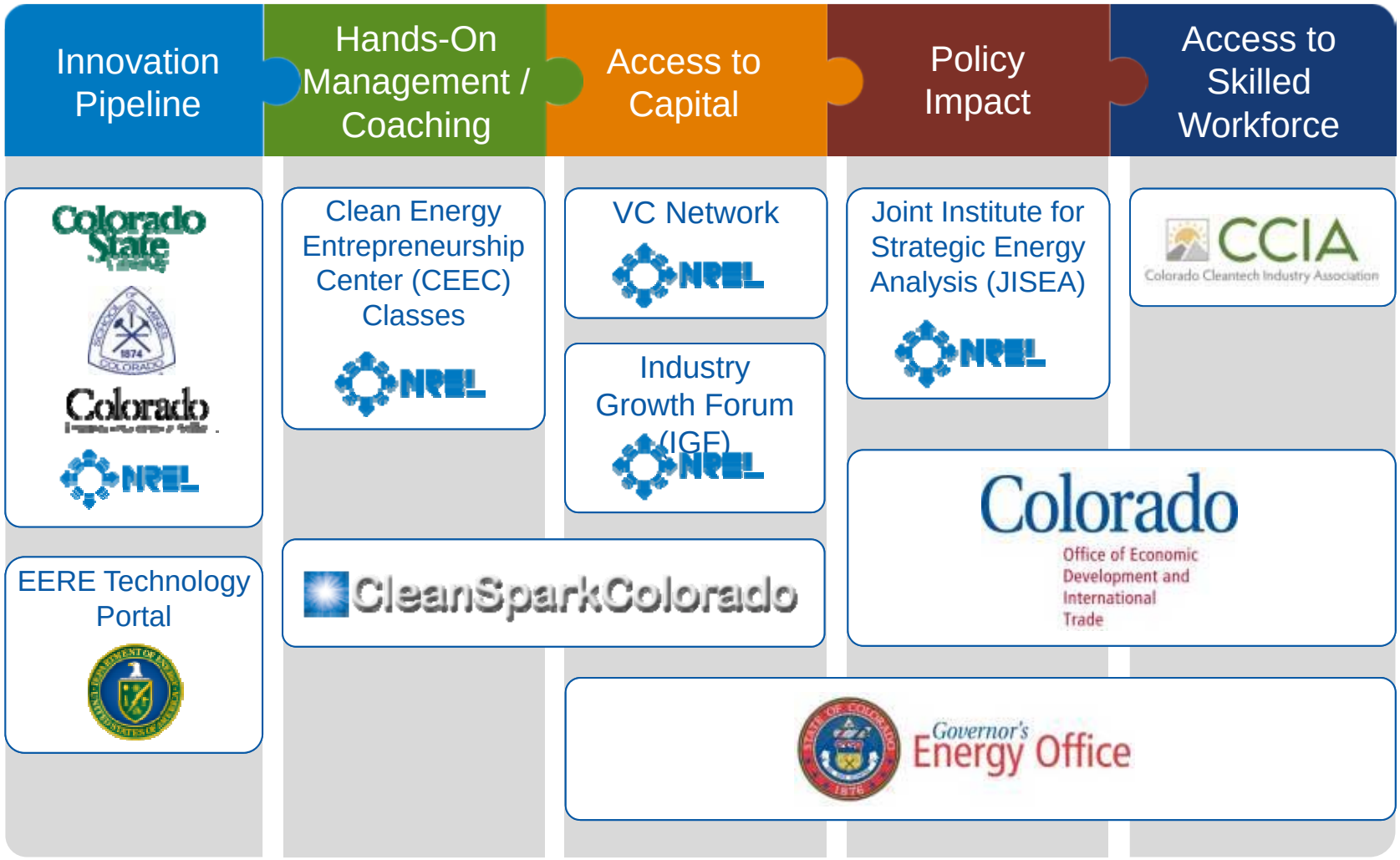
Colorado Center for Renewable Energy and Economic Development (CREED)

An ecosystem of stakeholders and services to support and expand cleantech entrepreneurship in Colorado

Proposed by Alliance in response to DOE RFP

Part of State of Colorado's commitment to DOE in partnership with Alliance

Leverage Capabilities



Colorado Center for Renewable Energy and Economic Development (CREED)

Providing a Home Base for CREED

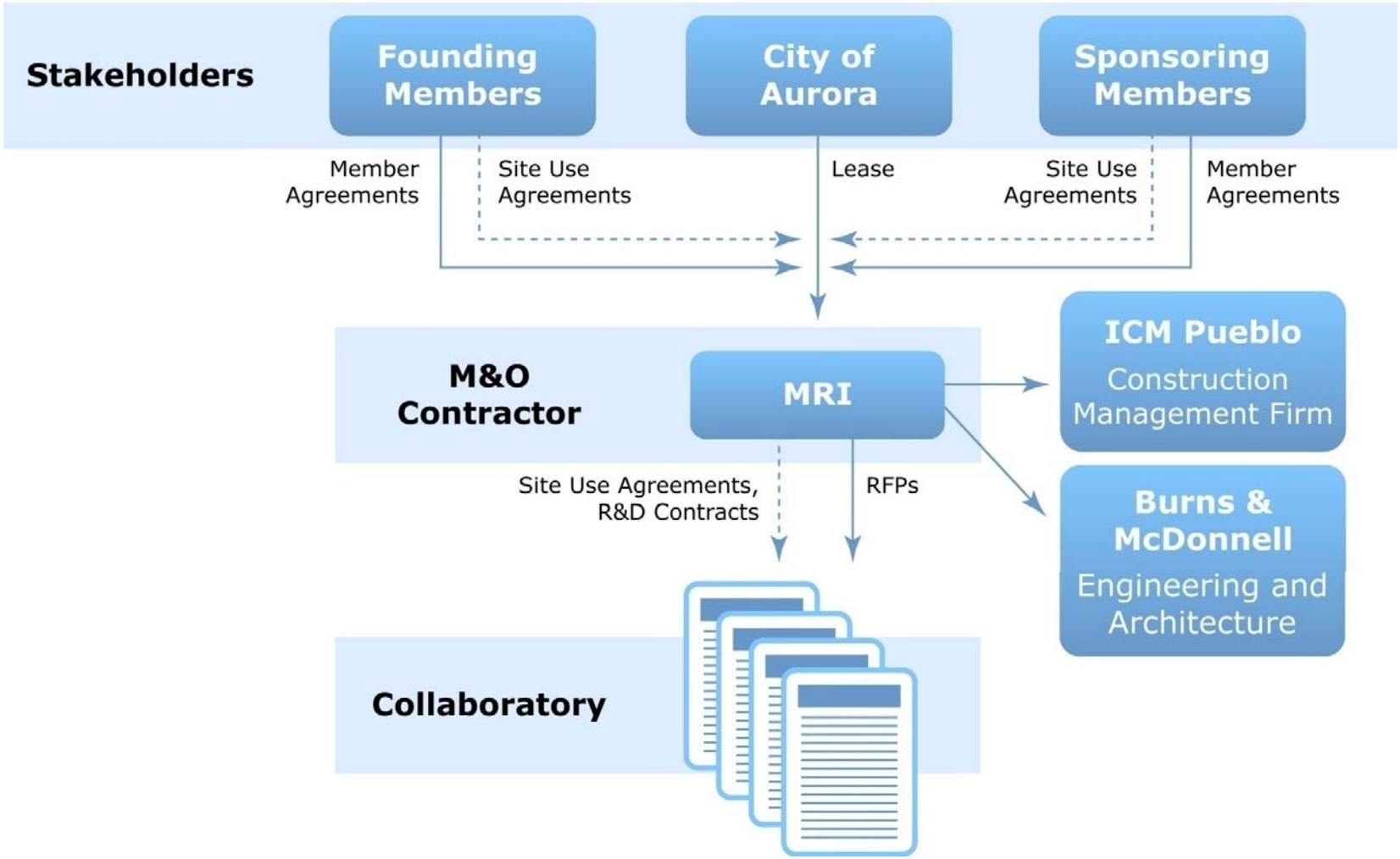
- Create a physical presence – proof of Federal and State commitment to cleantech.
- Leverage and mobilize Colorado's substantial asset base and partner resources.
- Innovative model – different institutional partners under one roof.
- Centralize CREED operations and facilitate communication.
- Located within walking distance of NREL campus but outside the gate.
- Most functions are already up and running.

What is SolarTAC?

The Solar Technology Acceleration Center (SolarTAC) is a:

- **Public-private partnership** to accelerate the market adoption of solar technologies
  - Three private companies: Abengoa Solar, Xcel Energy, and Sun Edison are original **founding members**
  - Alliance and EPRI recently became **sponsoring members**
  - MRI **manages and operates** the facility
- **Venue** being developed for research, demonstration, testing and validation in a commercial-scale environment
  - Located on a 74-acre solar test site adjacent to DIA
  - Offers site, grid interconnectivity, roads, and utilities
  - Site offers flat, graded topography, excellent insulation conditions, and more than 300 days of sunshine per year

SolarTAC Structure



How is NREL Involved?

Alliance signed a sponsoring member agreement on April 12, 2010. This will give NREL use of a “kick-the-tires” environment that:

- Expands physical capacity to test and validate DOE and privately-funded solar technologies at scale without capital investment and under real-world conditions
- Better positions the lab to provide performance and durability data needed to assist commercial deployment of a wide array of materials and systems

Benefits of Membership

Through the SolarTAC membership, NREL research and technical staff can:

- Leverage the infrastructure to set up projects
- Access up to 5 acres of land for proprietary performance testing
- Guide future development of SolarTAC through the Executive Board (Brent Rice) and a permanent seat on the Technical Advisory Board (David Mooney)
- Collaborate with industry, provide expertise, and share (public) R&D results with other members
- Partner with corporate members or develop other privately funded projects

NREL SolarTAC Projects Underway

DOE funded, pilot-scale test bed for thermal energy storage (TES) technologies:

- Led by Concentrating Solar Power (CSP) Program team, including **Mark Mehos** and **Tim Wendelin**
- Study and evaluate CSP technologies that make projects more financially feasible
- Help meet DOE goals to make CSP cost-competitive by 2015 and provide a sizeable amount of clean energy to the grid by 2020
- $2.5 million through Recovery Act to design and build the new test bed on site, which is expected to be completed by mid-2011.

NREL SolarTAC Projects Underway

AIST (Japan) on Concentrator Photovoltaic (CPV) Demonstration

- Led by Photovoltaic Reliability Group Manager, **Sarah Kurtz**
- Project will evaluate performance details of three multi-junction CPV cells/systems and provide needed data on how cells perform in different locations
- Functional by end of 2010; construction start planned for August or September
- AIST is funding the CPV and data; NREL and AIST will publish results jointly.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