



Connecticut Activities to Promote Emerging Renewable/Clean Technologies



Connecticut Programs to Promote Emerging Renewable Technologies

1. CCEF – Connecticut Clean Energy Fund \$30M
 - Project 100
 - Onsite DG program
 - Operational Demo
 - CT Clean Energy Options

2. CEEF -Connecticut Energy Efficiency Fund \$90M
 - Energy Conservation Programs
 - Demand Response Program
 - Energy efficiency Partnership +\$60m

3. OPM- State Energy Office
 - New energy Technology Program +\$50k/\$10k

Strategic Framework

CCEF Goals

1. Create a supply of clean energy (installed capacity)
2. Foster the growth, development and commercialization of clean energy technologies
3. Stimulate demand of clean energy by increasing public awareness



Supply Programs

- Project 100
- Onsite Renewable DG Program
- Small Solar PV Rebate Program

Clean Energy Technologies



Fuel Cells



Solar



Biomass



Hydro



Landfill Gas



Wave



Wind

Project 100

Project 100 – Legislation that requires the state’s electric distribution companies to enter into minimum 10-year contracts for no less than 100 MW of Class I renewable energy capacity--\$39.5 M Allocated

Result:

Round 1-34 MW forwarded to utilities

Round 2 – 31 Proposals/331 MW Received



Project 100 Evaluation Criteria

Financial Viability

- Financial expectations and assumptions
- Financing experience and creditworthiness
- Financial structure
- Status of attracting capital
- Firmness of cost data

Technical Feasibility

- Team experience
- Permitting status and public acceptance
- Site control
- Design status and technical viability
- Fuel/resource plan

CT Ratepayer Costs and Benefits

- Contract price
- CCEF investment amount
- CT economic development potential
- CT T&D impact
- CT energy price suppression
- Diversity

Onsite Renewable DG Program

Onsite Renewable DG Program – designed to stimulate the demand for behind-the-meter installations of clean energy at CI&I buildings in the state – \$32.3 M Allocated

Result:

27 Solar PV completed/in process – 1.3 MW; 6 fuel cells, 1.3 MW



On-site Renewable Distributed Generation Program

Project Funding Amounts

- Max funding → \$4,000,000
- Funding Caps

Technology	Solar	Fuel Cells	Small Wind	Small Biomass	Landfill Gas	Hydro
Funding cap	\$5/W	\$4.70/W	\$3.60/W	\$3.30/W	\$3.20/W	TBD
Evaluation timeframe	20 yrs	10 yrs	15 yrs	10 yrs	10 yrs	TBD

- Specific grant amount determined after CCEF completes project modeling

Demand Side Programs

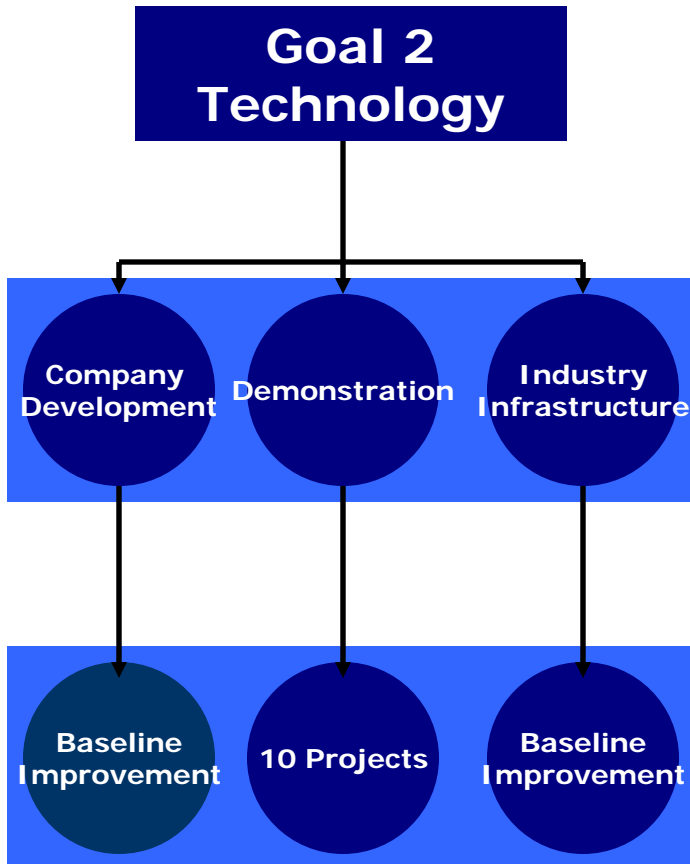
Public Education & Awareness

- **Connecticut Clean Energy Communities Program** – aid to Connecticut municipalities to assist in the support and purchase of clean energy

Results (as of February 2007):

- ❑ **41** towns have joined **20% by 2010** Campaign
- ❑ **20** towns have qualified as **Clean Energy Communities**
- ❑ **12,000** signups for **CTCleanEnergyOptions** equivalent to **94,500 MWh's of demand** or 31.5 MW of wind
- ❑ **8** towns installed or in process of installing earned solar systems
- ❑ **90 kilowatts** of free solar systems earned
- ❑ Received **2006 Green Power Pilot Award** from the EPA and DOE

Emerging Technologies



Program Goal 2 –Support the early-stage development of the clean energy industry in Connecticut by significantly improving the infrastructure and **demonstrating the viability of innovative clean energy technologies.**

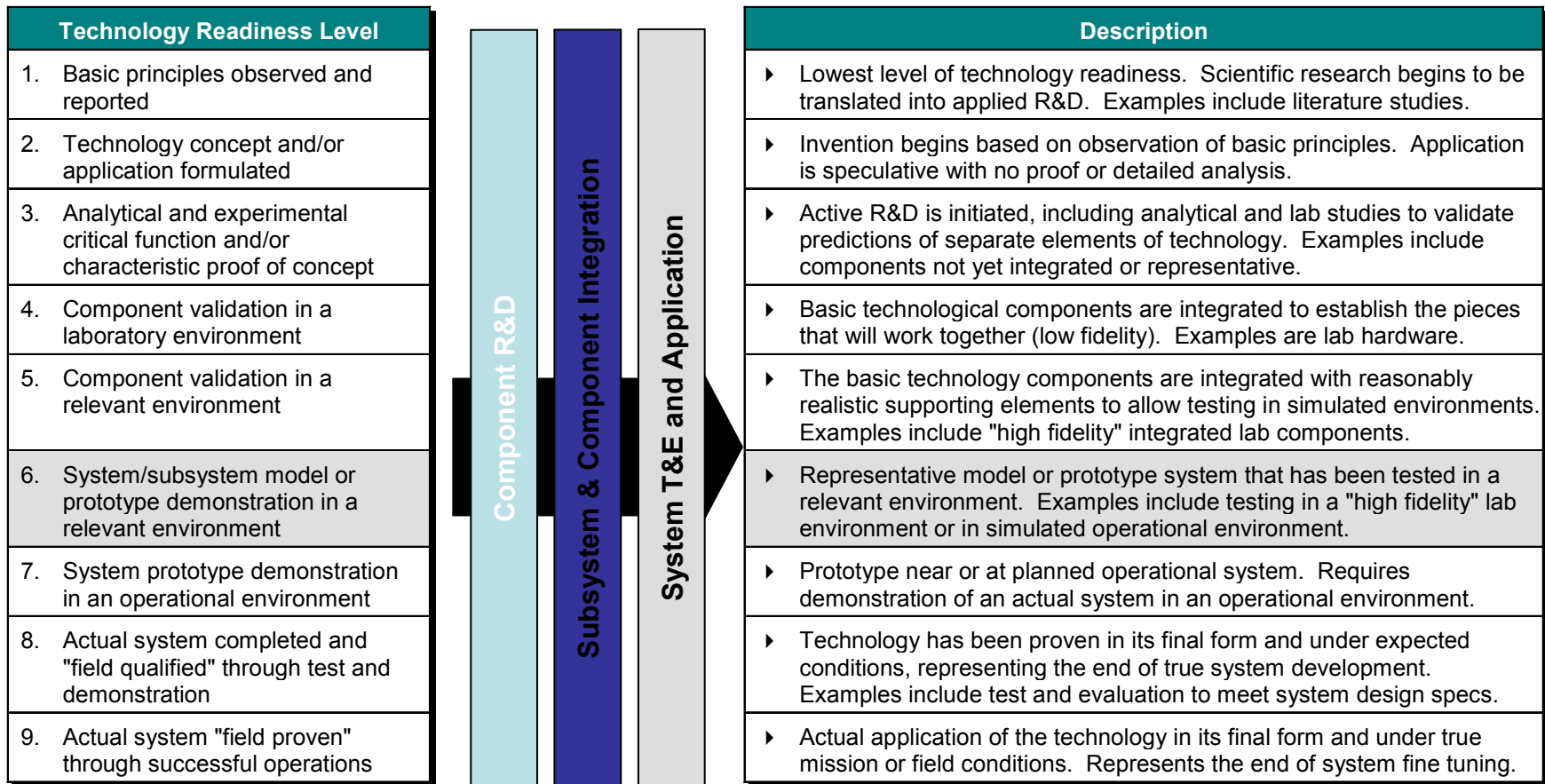
Connecticut's Emerging Technology Initiatives

- Yankee Ingenuity Applied Research \$750k/year
- \$3M Equity Investments in Renewable Tech Companies
\$500k/investment
- \$4M Operational Demonstration Program -\$750k/project
- \$3.5M Endowment to Create CGFCC
- \$2M/year Sustainable Energy Eminent Faculty
- Facilitate Business Plan development through Connecticut
Innovations Pre-Seed Fund \$100k/project
- \$50k Office Of Policy and Management Energy Technology
Grant - \$10k/project

Connecticut's Infrastructure Initiatives

- Renewable Resource Assessments
 - Wind Maps of New England
 - Biomass Resource assessments and Technology Characterization studies
 - Small wind demonstration program
- Fuel Cell Performance Monitoring Program
- Energy Technology Education initiatives
 - Pilot Post High School Renewable Energy curriculum

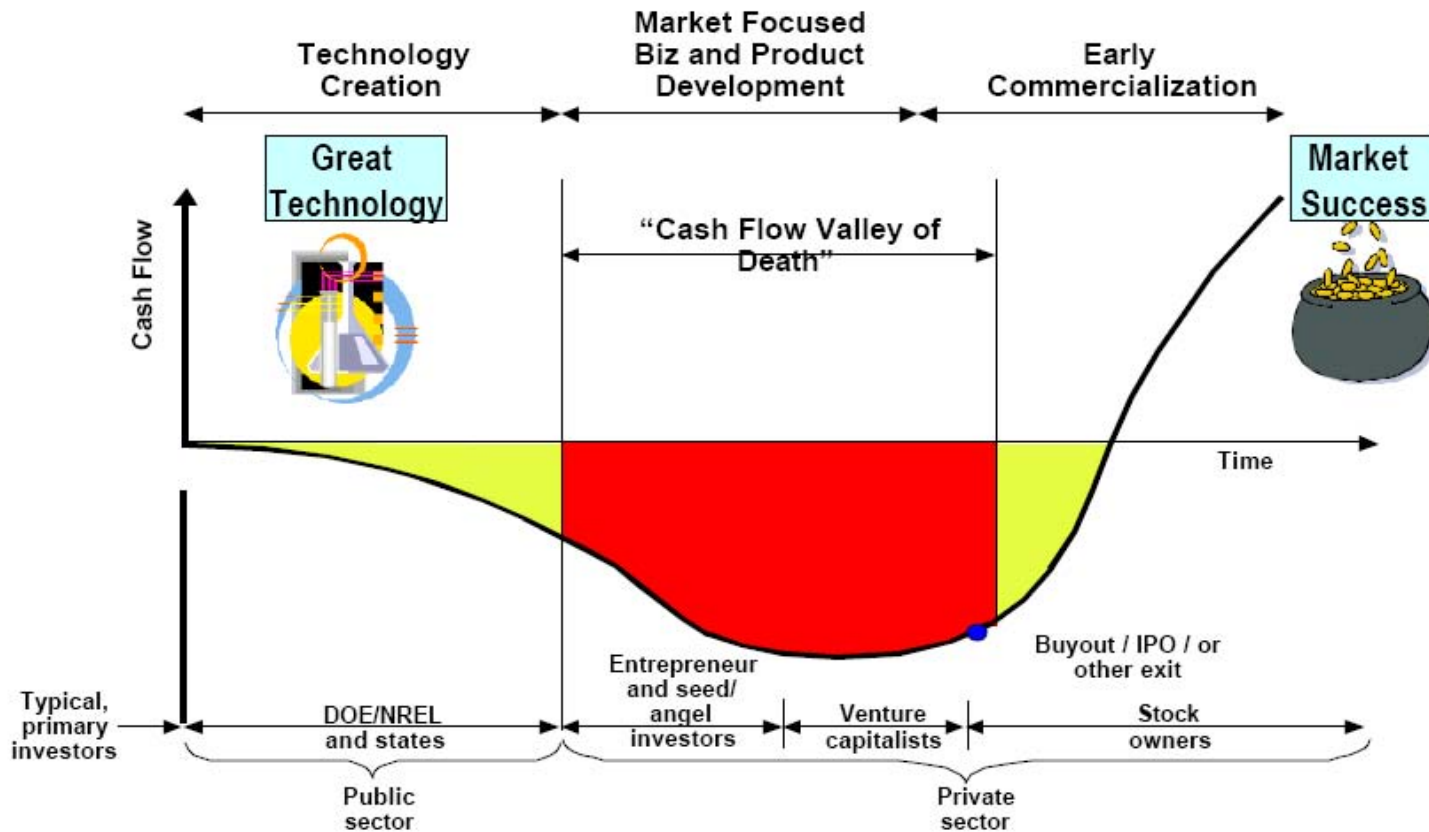
DOD/GAO Guidelines To Gauge Technology Maturity



(1) Best Practices: Better Management of Technology Management Can Improve System Outcomes (GAO/NSIAD-99-162, 1999)

Innovation Spectrum

Operational Demo - Bridging the Valley of Death



References

Bridging the Valley of Death: Transitioning from Public to Private Sector Financing NREL (Chart by David Berg)

Project Due Diligence

- Evaluation process includes:
 - Technology Analysis (Innovation/Uniqueness/Value Added)
 - Market and Competition analysis,
 - Cost Effectiveness
 - Company & Management Experience
 - Host site readiness (regulatory/legal)

Financing Vehicle

- Non-Recourse Loan
 - Up to \$750,000

- Payback based on level of “Commercial Success”
 - 3 year commercialization window
 - 5 years for fuel cells

- 25% cash cost share

Technology Development Programs

- **Operational Demonstration Program** – provides funds for pre-commercial stage clean energy projects that rely on the innovative use or application of renewable energy generation technologies - \$4.0 million allocated

Result:

9 Demonstrations comprising 412 kW; Fueled by hydrogen (5), natural gas (2), wood chips (1), and Water (2)

- **Yankee Ingenuity Program** - \$1.5 million allocated

Result:

4 Applied Research Projects
Underway





Connecticut Clean Energy Fund

VISIT US ONLINE

www.ctcleanenergy.com

www.ctinnovations.com

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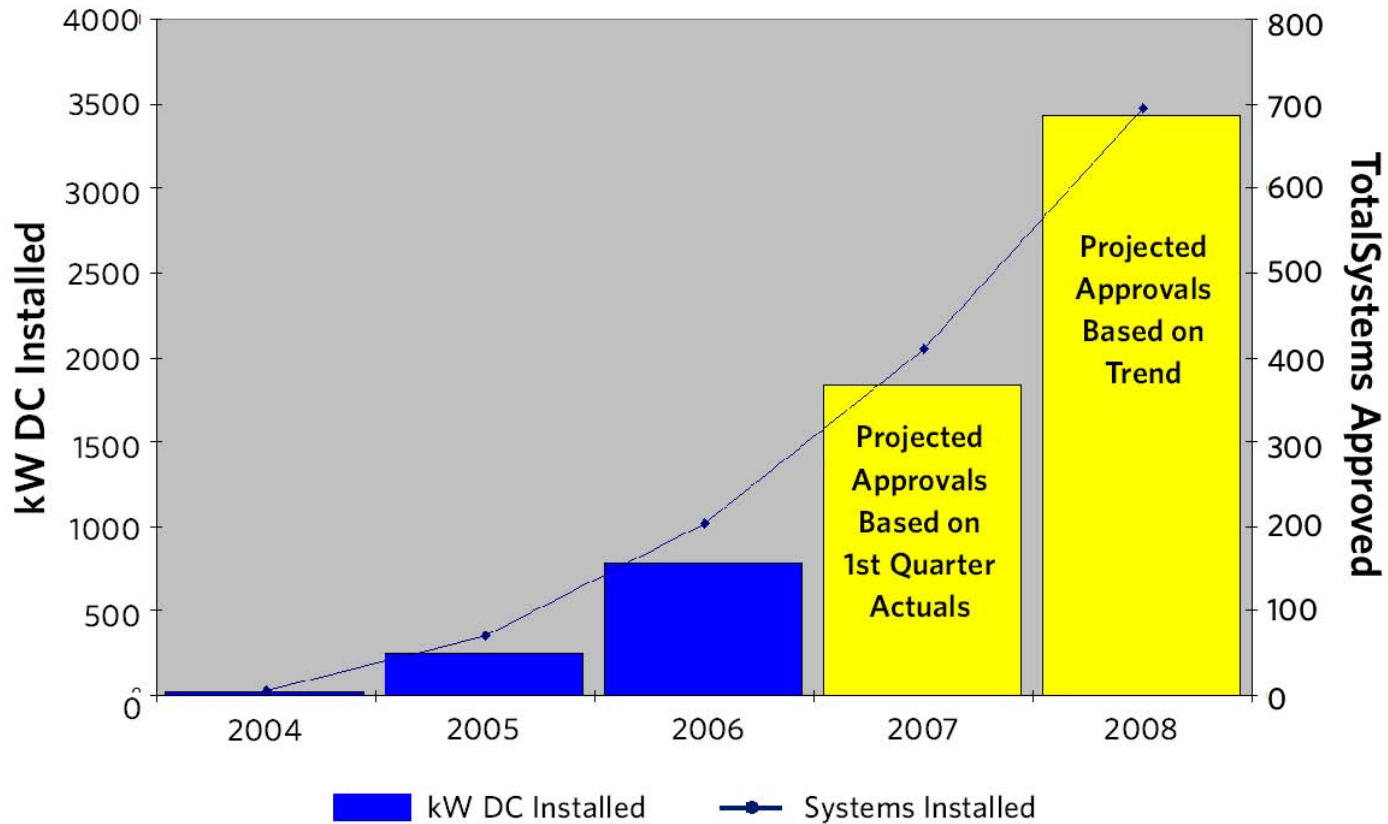
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■ BACK UP SLIDES

Residential Solar Systems

Cumulative Residential PV Systems Approved



C & I Projects

Cumulative Commercial & Industrial Projects

