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CLEAN ENERGY FUND

DOE Hydrogen and Fuel Cell Technical Advisory Committee Meeting

Lise Dondy

President

July 15, 2009

Mission



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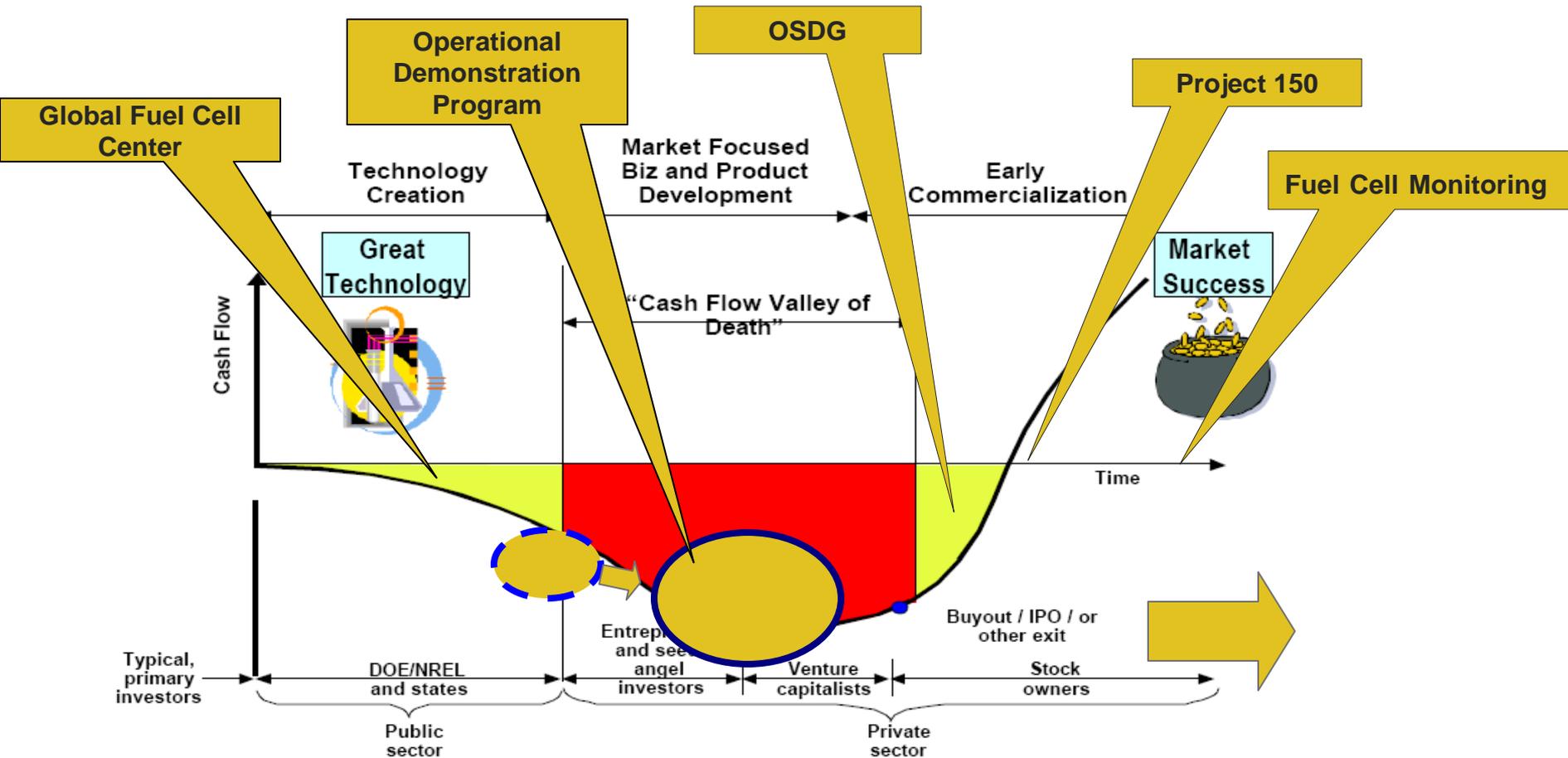
- **The Connecticut Clean Energy Fund promotes, develops, and invests in clean energy sources for the benefit of Connecticut ratepayers.**
- **Three main goals to increase:**
 - Installed Renewable Energy Capacity
 - Emerging Renewable Energy Technologies
 - Renewable Energy Demand & Sustainability



Alpha Stage Program



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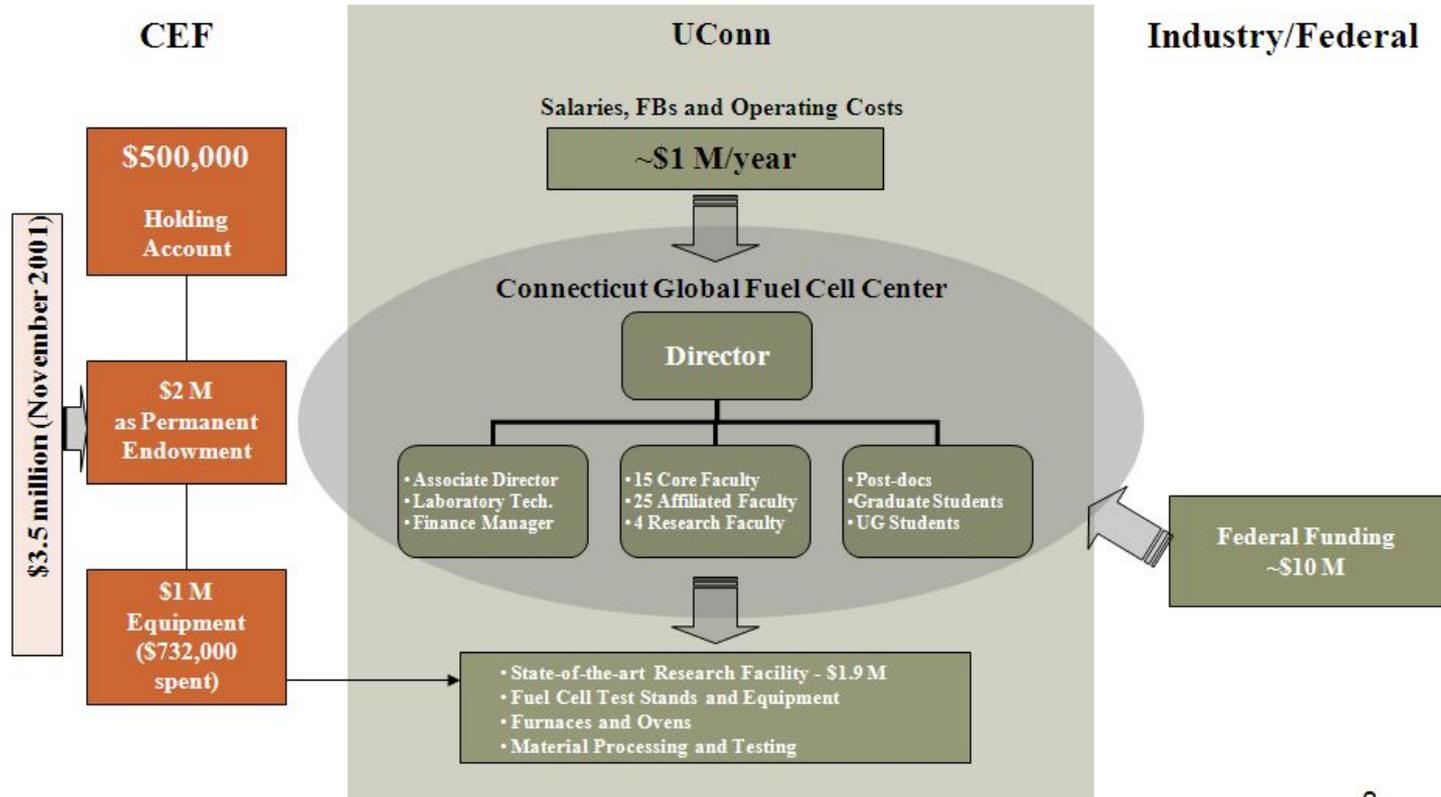


Source: Bridging the Valley of Death: Transitioning from Public to Private Sector Financing, L.M. Murphy at NREL (May 2003)

Connecticut Global Fuel Cell Center



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On-Site Renewable DG Program – Fuel Cell



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- ▶ **Up to \$4,000,000 in incentives for fuel cells**
- ▶ **Projects up to 2,000 kilowatts**
 - ▶ Up to \$4.70 per Watt (most are much lower)
 - ▶ Incented size limited to site's annual usage
- ▶ **Pays for about 25-50% of total system cost**
- ▶ **Limitations:**
 - ▶ Site must have a minimum 300 kW base load
 - ▶ Site must be able to use at least 50% of "waste" heat
 - ▶ Must have access to natural gas service



Yale – Peabody Museum

On-site DG program – Results (as of 07/08/09)



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- ▶ 13 projects /4.2 MW
- ▶ \$25 million total project costs



Middletown High School

Project 150 Program - Goal



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- 150 MW of renewable “utility grade” energy through long term PPAS.
- 8 Fuel Cell Projects
- Range 2.4 MW  14.9 MW
- Total 45 MW

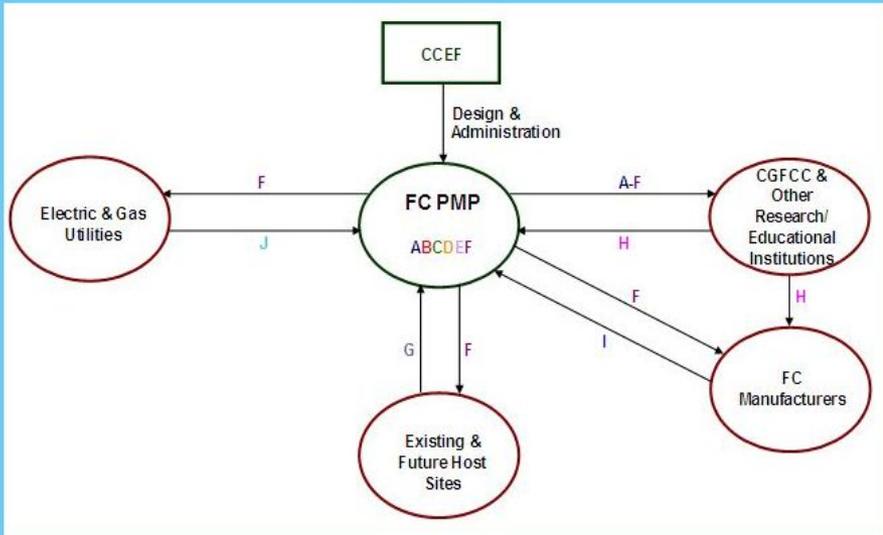


Pepperidge Farm Facility

Web Accessible Fuel Cell Performance Monitoring Program



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- A: "Fuel in" to "net AC power out" electrical efficiency (LHV & HHV)
- B: Summary of availability, reliability and longest continuous run
- C: Overall efficiency for CHP applications (LHV & HHV)
- D: NOx emissions (PPM & lbs/kWh)
- E: Cost of electricity production based on total installed cost, fuel cost and other O&M costs
- F: Technology benchmarking for real-time fuel systems option comparison
- G: Real-time operational information for A-F
- H: Design improvements, material upgrade options, and operational change recommendations
- I: Operational changes for improvements from baseline
- J: System reliability benefits (VAR support)

REMOTE MONITORING WEB PORTAL



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Visit us online
ctcleanenergy.com

200 Corporate Place, 3rd Floor
Rocky Hill, CT (860) 563-0015