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# ITC Role in US Fuel Cell Projects

## Case Study With a DOD Facility



MCB Camp Pendleton, CA

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## Key Project Objectives

- Turn-key fixed price contract
- Furnish, install & integrate 750kW CHP MCFC system with customer facilities
- Provide base load power and heat with environmental & energy security benefits
- Demonstrate reliability & interoperability with built environment





## Project Background

- Camp Pendleton contract award: 9/30/05
- Contracting agency: Naval Air Warfare Weapons Division, China Lake
- Contract terms: 3 year O&M services, 1 year warranty, best efforts

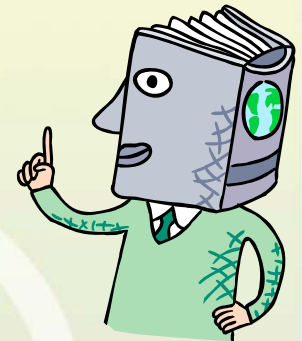


- Initial contract amount: \$4,150,000
- Fuel cell manufacturer: FuelCell Energy Danbury, CT
- Product: 3 DFC300MA 250kW MCFC power plants



## Fuel Cell ITC Rules

- The American Recovery and Investment Act, 2009
- Qualifying Fuel Cell Property
  - Plant with nameplate capacity  $>0.5\text{kW}$  of electricity
  - Uses an electrochemical power generation process
  - Has electrical efficiency  $>30\%$  (ASME PTC50)
  - In service after 01/01/09 and before 12/31/16





## Fuel Cell ITC Rules



- ITC/Grant Value = Lesser of:
  - \$3,000/kW installed capacity OR
  - 30% of project's first cost
  - Or elect US Treasury tax exempt grant, same terms
- Claimant Suitability
  - A tax paying entity/owner; direct purchase or ownership by service provider of qualified fuel cell property
  - A "C" corporation with tax liability (ITC may not offset AMT)
- Recapture
  - 100% in 1<sup>st</sup> year and reduces by 20% per year
  - Requires 5 year holding period





## Monetizing Camp Pendleton ITC

\$750,000... Camp Pendleton ITC face value...old ITC rule, \$1000/kW

(\$112,500)...ITC 15% investment discount

(\$55,000)... Accounting fees... transaction qualification, analysis & memo

(\$35,000)... Legal fees... LLC formation, operating agreement, tax opinion

(\$37,500)... 5% ITC placement fee

(\$240,000)... Project burdens...32% of face value of ITC

\$510,000... Net ITC project investment



## Enhanced Pendleton Contract Mod With ITC

- Transfer ownership of equipment to contractor.
- Provide 5 year services with “bumper to bumper” warranty.
- Contractor provide CA SGIP grant & CCFCG grant.
- Provide pass-through of equipment to investor LLC.
- Provide assignment of ITC to LLC.
- Proposal terms accepted and contract modified 10/26/06.



# ITC Impact on Project



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MCB Camp Pendleton, CA  
 500kW Placed in Service Oct 2007  
 250kW Placed in Service Feb 2008

	<b>Original Contract / 3 Yr</b>	<b>ITC contract / 5Yr</b>
Navy Contract	\$ 4,150,000	\$ 4,150,000
<b>ITC</b>		<b>\$ 510,000</b>
<b>SGIP</b>		<b>\$ 1,875,000</b>
<b>CCFCG</b>		<b>\$ 750,000</b>
Change Orders	\$ 900,000	\$ 900,000
Total Project Cost to Govt	\$ 5,050,000	\$ 5,050,000
Cost of Added Value		\$ 3,135,000
3 Yr Projected Savings	\$ 1,125,000	
5 Yr Projected Savings		\$ 1,875,000
Net Project Cost to Govt	\$ 3,925,000	\$ 3,175,000
Price per kW	\$ 5,233	\$ 4,233

All incentives required to provide 5 year contract.

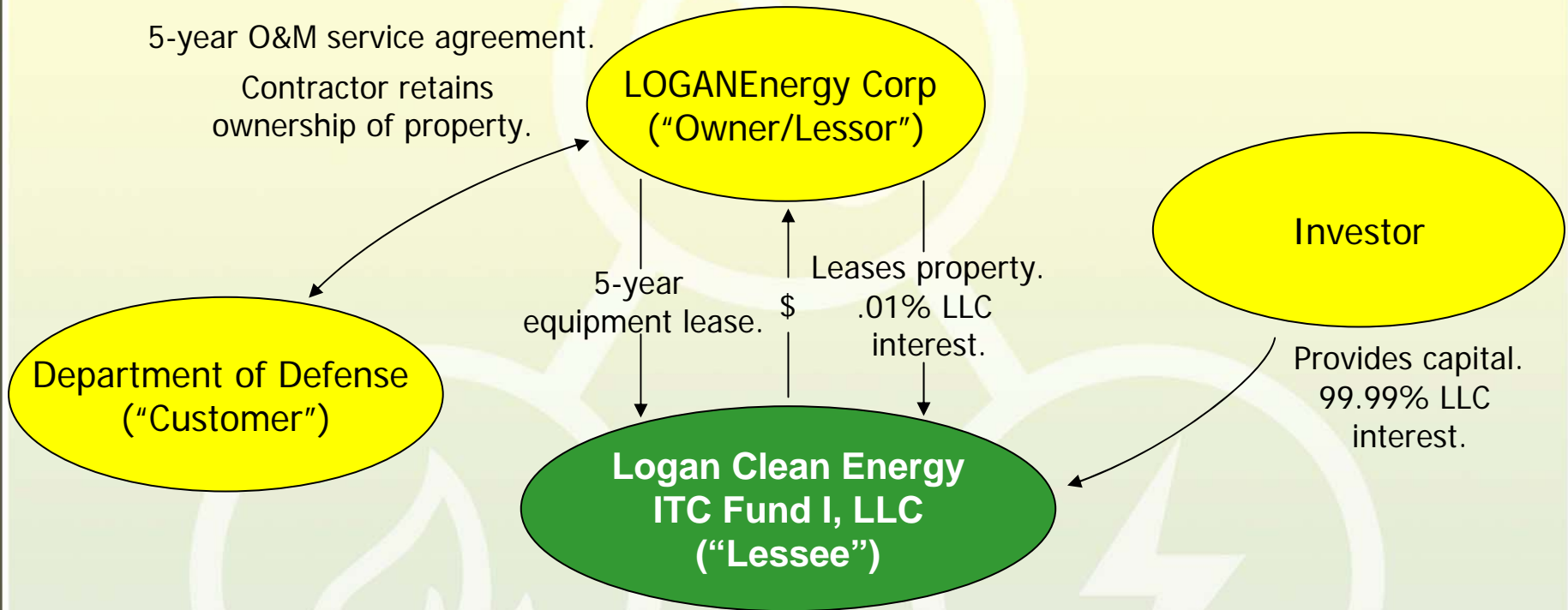
### **Added Value of ITC and other Incentives**

ITC and other incentives reduced absolute project cost to government by \$1,000/kW  
 Providing 5 year complete warranty parts and service vs..  
 1 year warranty and 3 years service, no replacements after first year.





## ITC Project Organization Chart



***"...use federal tax policy to catalyze and accelerate private infrastructure financing and capital flows..."*** Former Assistant Secretary Alexander Karsner, before the Committee on Appropriations, Subcommittee on Energy and Water, United States Senate, May 8, 2007



# ITC Impact at US Locations

## Analysis of 600kW ITC Projects USA Locations

	<u>Dallas, TX</u>	<u>Stamford, CT</u>
1 Project Cost	\$ 3,600,000	\$ 4,150,000
2 ITC Credit	\$ 1,080,000	\$ 1,245,000
3 State Incentive	\$ -	\$ 1,950,000
Net First Cost	\$ 2,520,000	\$ 955,000
\$\$/kW	\$ 4,200	\$ 1,592
4 Utility Power	\$ 0.1150	\$ 0.1400
5 Utility Gas /kW	\$ 0.0950	\$ 0.0875
Annual kWh	\$ 4,730,400	\$ 4,730,400
10 Yr. Financing \$\$/Year	\$ 189,032	\$ 71,637
\$\$/kW	\$ 0.0400	\$ 0.0151
O&M T&I	\$ 0.0575	\$ 0.0575
Total Operating Costs	\$ 0.1925	\$ 0.1601
6 Renewable Energy Credits	\$ -	\$ (0.04)
Adjusted Cost		\$ 0.1201
7 Operating Rev (Deficit)	\$ (0.0775)	\$ 0.0199

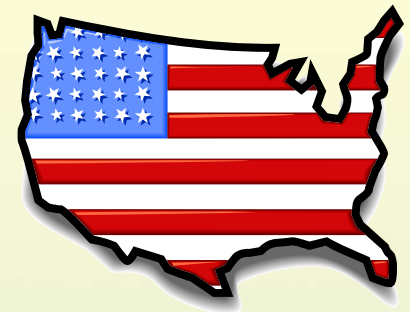
### Notes to Spreadsheet

1. OEM priced to market conditions
2. ITC Credit 30% of first cost
3. CT CCEF Fund...project incentive grant
4. Regional utility rate
5. Regional gas rate...no transport charge in CT.
6. Renewable Energy Credit...CT \$0.04/kW
7. Operating Rev...share with customer



## Market Transformation, Adoption & Acceleration

- In CA and CT only: State Incentives
  - Projects in other 48 states require sourcing incentive equity / “buy down” to leverage financing for qualifying ITC projects
  - Need to promote national incentive package that looks like CA and CT
- Promote a National REC / RPS Program
  - CT example
- Provide “Evergreen” DOE Commercial Loan Guarantees
  - DG sized projects...\$750,000 - \$10,000,000



# Energy Act 2009



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## Market Transformation, Adoption & Acceleration

- National Net Metering & Feed-in Tariffs
  - Should become a part of the market transformation strategy.
- CA provides SGIP grants for Advanced Energy Storage
  - This could become a national “smart grid” program.
- Allow ITC/Grant to offset AMT
- Fix credit at \$3,000/kW to expand markets.



## Market Transformation, Adoption & Acceleration

### *Some Practical Suggestions for Fed Gov...*

1. Identify / characterize Fed Gov sites with applications for all commercial fuel cell products 1kW – multi megawatt...
2. Aggregate large multi-year orders to stabilize fuel cell supply chain requiring positive impact on price / time curve...  
IFC / World Bank Program example...
3. Provide “evergreen” loan guarantees for DG sized applications...
4. Replace all Gov end-of-life diesel generators with fuel cell solutions...
5. Specify fuel cell solutions for all Gov emergency generators...





## Market Transformation, Adoption & Acceleration

### *Some Practical Suggestions for Industry...*

1. Offer Fed Gov "Bankable" Energy Service Contracts...
2. Create ITC investment equity pool in a large "ITC Investment Bank" for ready source of project financing...needs large orders.
3. Leverage the myriad state gov, PUC, local financial incentives with investor equity and commercial financing to spread financial risk...
4. Provide creative fuel cell synergies with renewable energy sources to enhance facility performance...
5. Learn to apply fuel cell solutions to emerging "Smart Grid" architecture...



## Financial Factors...At a Glance

**Costs**

**Credits**

First Costs

Fuel Costs

Maintenance Costs

Scheduled Overhauls

Energy Savings

Fed ITC RECs

State / ITC Subsidies

Appropriated Funds

Pricing Factors

Lower IRR

Higher IRR

## CONCLUSION

Federal ITC is very stimulative of Fuel Cell Market Transformation in the two states, CA and CT, that provide rate-payer supported DG or clean energy incentives. Lacking that, or similar “buy down” programs, Federal ITC alone will not appreciably energize clean energy markets throughout the US under the current ITC legislation.

Real Market Transformation should start by drafting a thoughtful, executable, federally assisted financing plan (CCFCG look-alike) that is inclusive of all fuel cell industry sectors, focused on all energy market segments throughout the US and negotiated by key government and industry stakeholders; and it needs to happen just as quickly as possible...!!



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*Thank You...!!*

