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Business Models that Capture the Indirect Value of EV Charging Services

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CENTER FOR CLIMATE
AND ENERGY SOLUTIONS

C2ES.ORG



- **Independent, nonpartisan, nonprofit organization**
- **Working to advance strong policy and action to address the twin challenges of energy and climate change**
- **Founded in 1998 as the Pew Center on Global Climate Change**
- **Became C2ES in 2011**

Business Environmental Leadership Council (BELC)



- **Describe business challenge facing electric vehicle (EV) charging infrastructure**
- **Explain how new business models can capture indirect value of charging services**
 - Establish value of charging services for private sector partners
 - Illustrate feasibility of business models by applying them to key charging infrastructure gaps
- **Identify short-term public sector interventions that enable private sector partners to implement business models**
 - Interventions by state and local government can improve business case in short term
 - In 5 years, private sector business model are viable without public sector support if the EV market continues to grow

Project: *Unlocking Private Sector Financing for Alternative Fuel Vehicles and Fueling Infrastructure*

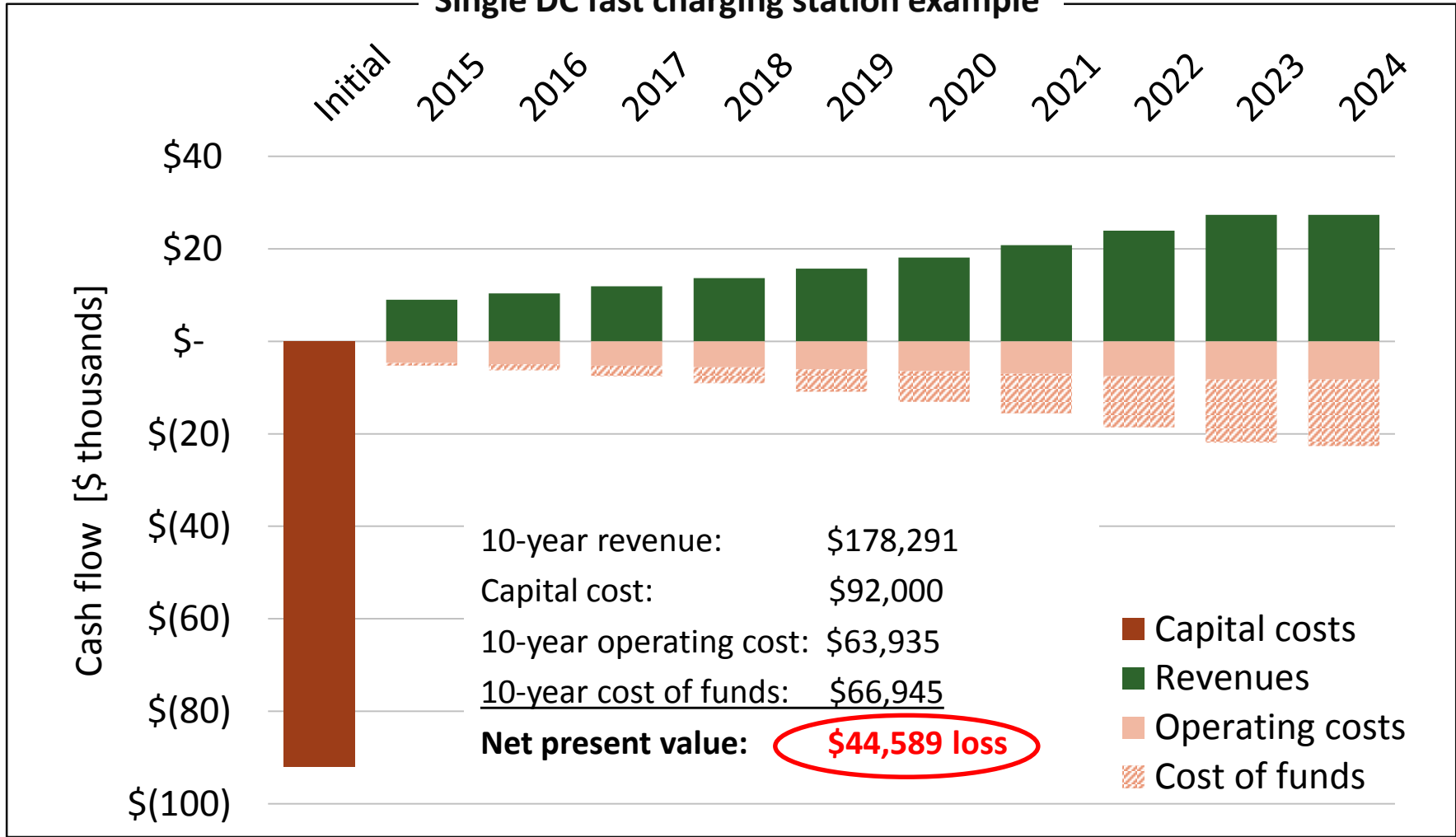


- **NASEO and C2ES, with funding from U.S. Department of Energy's Clean Cities Program, began this project in early 2013**
 - Transportation Energy Partners (TEP), New York State Energy Research and Development Authority (NYSERDA), and Colorado Energy Office are partners on this project
- **Goal: Develop strategies to demonstrate and advance new business models for AFVs and fueling infrastructure**
 - Apply lessons learned from use of financial mechanisms in other sectors to accelerate AFV deployment
- **Convening the AFV Finance Advisory Group, a diverse group of finance professionals, automakers, infrastructure providers, and public officials**
- **Producing original research and conducting stakeholder engagement and advising**

Why can't the private sector currently fund the DC fast charging network on its own?



Single DC fast charging station example



More Private Investment Requires Capturing Indirect Value of Charging Services



- **Business models based solely on direct revenues from EV charging services are currently financially infeasible**
- **Business models that capture the indirect value the private sector gains from EV charging services will increase private sector investment**
- **Some examples of EV charging indirect value**
 - Increased sales of other products and services at businesses located near EV chargers
 - Increased tourism business from EV travel to popular destinations
 - Increased sales of EVs
 - “Clean energy” marketing and brand-strengthening opportunities
- **Key private sector partners: automaker, electric utility, and retailer**
 - These partners could share some of the indirect value they derive from EV charging stations by contributing funds to the charging service provider to help stations get deployed

- **Private sector partners who stand to benefit from an EV charging network can improve the business case for charging service providers**
 - Subsidize upfront cost of charging equipment
 - Share portion of indirect revenue from EV charging use with owner operator
- **Demonstrate effect on charging station project financial performance of sharing value with owner operator of charging services**
 - Use Financial Analysis Tool developed by C2ES and Cadmus Group for financial analysis
 - Use three charging infrastructure gaps identified from charging network assessment



- **Value Proposition**

- A large business that benefits from expanded access to EV charging infrastructure contributes funding to subsidize deployment a DC fast charging network for interregional EV travel

- **Sources of indirect value**

- Increased sales of EVs
- “Clean energy” marketing and brand-strengthening opportunities

- **Candidate funding partners are larger businesses that can capture the indirect value, such as:**

- Automakers • Retail chains
- Electric utilities • Restaurant chains

- **Funding partner grants funds directly to charging station owner operator to subsidize network construction**

Charging Gap: Enable Interregional EV Travel on Interstate 90



- I-90 between Seattle to Spokane is a critical east-west corridor in the state
- DC fast charging station availability is insufficient to enable east-west travel of BEVs between Seattle and Spokane
- Filling the Charging Gap: 6 DC Fast Charging Stations



Business Model Example: Financial Analysis Shows Negative NPV for Owner Operator and Project



- Even with a \$42,000 subsidy from an automaker, the I-90 network still loses money

Financial Metric	Result
<i>Owner/operator</i>	
Funds spent on stations (equity)	\$224,640
Funds spent on stations (loans)	\$336,960
NPV	-\$118,207
Payback period	No payback
<i>Funding partner</i>	
Amount of funds transferred to owner/operator	\$42,000
NPV	+\$19,532
Payback period	5 years
<i>Total project level</i>	
Total capital investment (spent on charging station deployment)	\$561,600
NPV	-\$87,777
Payback period	No payback

Business Models are Unlikely to Succeed Without Public Sector Support in the Near Term



- **Identify role of public sector in implementing three charging station business models in short term**
- **Illustrate how public sector can help private sector to implement sustainable business models**
 - What combination of public subsidies/policies can achieve 5-year payback for owner operator and private sector partners?
 - What may the business models look like in the future, if public subsidies/policies are implemented in near term?
 - Identify possible revenue sources to implement public subsidies/policies

Business Model Example: I-90 Charging Gap, Near Term (2016-2025)



• Public Sector Interventions

- Low-Interest Loan: \$110,000 at 5.4%, 10 year term
- Grant: \$220,000
- Extension of BEV sales tax exemption

• Project Capitalization

- Total project cost = \$561,600
 - 20% owner-operator equity
 - 20% private loans
 - 20% public loans
 - 40% public grant
- Private sector partner (automaker) contributes \$42,000 up front

Financial Performance

<i>Owner/operator</i>	
NPV	+\$136,835
Payback	5 years
<i>Funding partner</i>	
NPV	+\$19,532
Payback	5 years
<i>Public sector</i>	
NPV	-\$222,394
Payback period	n/a
<i>Total project level</i>	
NPV	-\$61,033
Payback period	n/a

Business Model Example: I-90 Charging Gap, 5 Years from Now (2021-2030)



- *No public subsidies are needed*
- **Public Sector Interventions**
 - Sales tax exemption ends in 2020
 - No loans or grants are issued for this project
- **Project Capitalization**
 - Total project cost = \$508,170
 - 40% owner-operator equity
 - 60% private loans
 - Private sector partner (automaker) contributes \$42,000 up front

Financial Performance

<i>Owner/operator</i>	
NPV	+\$115,566
Payback	5 years
<i>Funding partner</i>	
NPV	+\$19,532
Payback	5 years
<i>Public sector</i>	
NPV	n/a
Payback period	n/a
<i>Total project level</i>	
NPV	+\$155,450
Payback period	5 years

- **Private sector entities that gain indirect value from EV charging station deployment play a critical role in improving financial performance of EV charging station investments**
- **Difficult to make EV charging investment attractive to business owner-operators (5-year payback) with private sector partners alone**
- **Public sector can enable new business models in near term**
 - In near term, public sector interventions are needed for owner-operator to reach payback within 5 years for each business model
 - If the EV market develops, the role for government can be scaled down to virtually nothing in 5 years



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