



Docket IR 22-076

**Investigation of Whether Current and Tariffs and Programs are
Sufficient to Support Demand Response & Electric Vehicle charging
Programs**

Electric Vehicle DCFC Economic Model Examples

Impact of Capital Expenses and Utility Demand Charges

******Estimates For Illustrative Purposes only******

1. 62.5kW: NO Grant, NO Make Ready Funding
2. 150kW: NO Grant, NO Make Ready Funding
3. 62.5kW: 80% Grant Funded, NO Make Ready
4. 150kW: 80% Grant Funded, NO Make Ready

No Grant or Make Ready Example of (2) 62.5 kW DCFC

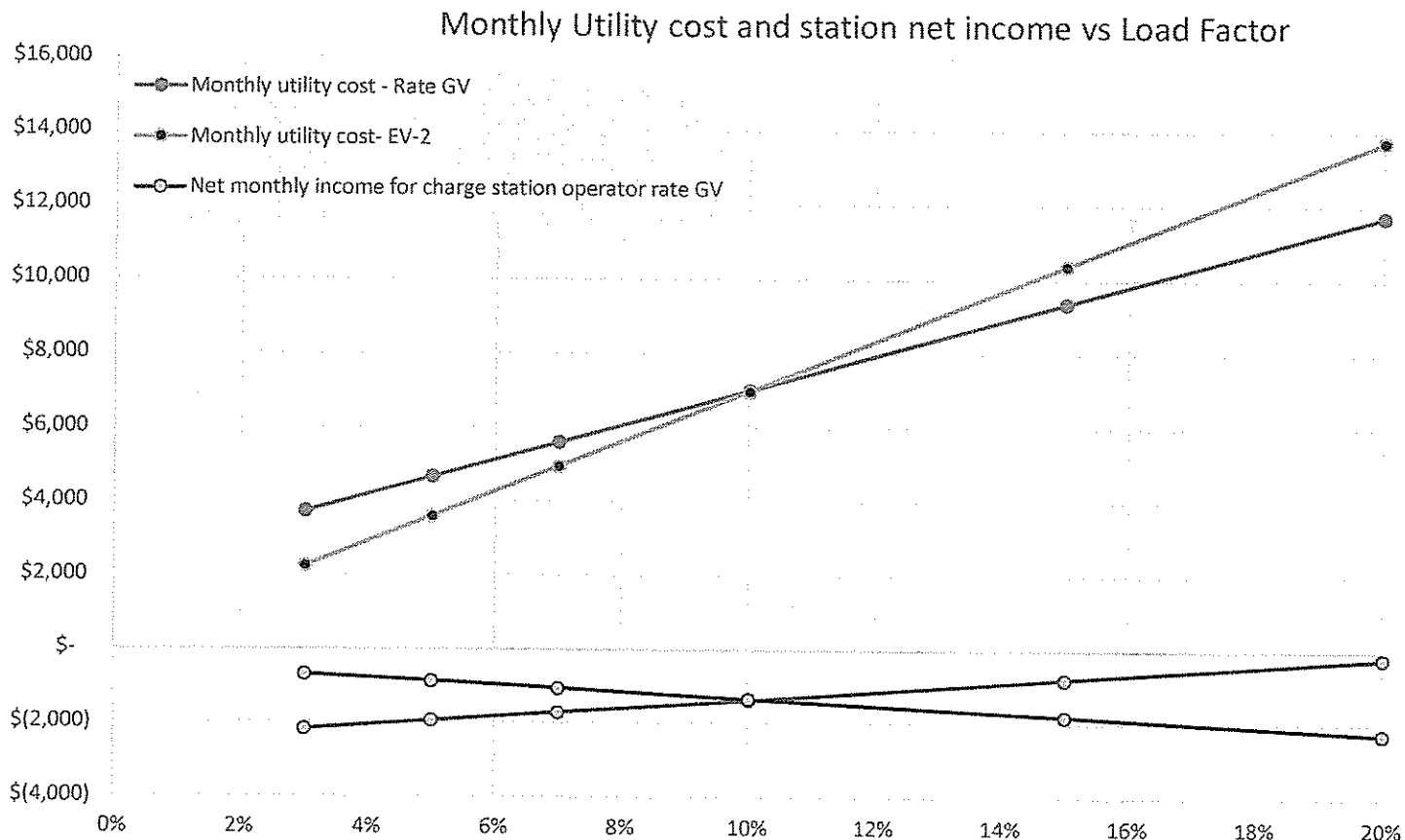
INPUTS:

		notes
# of chargers per station	2	
peak load per charger	62.5 kW	Typical VW RFP hardware
EV charging cost to customer (on par with gas: \$3.50/Gall)	0.65 \$/kwhr	Electrify America. Evgo, Tesla \$0.41
fixed station operating expense per month	\$200 \$/mo	includes insurance, basic O&M, vandalism
Station capital cost	\$380,000	Full cost - no grant funding or make ready program
Station owner annual return: Blank for now		Typical expected ROI on capital
station electrical efficiency	95%	

Rate GV	
Fixed Charge monthly	\$ 211
Demand Charge (per kW)	\$ 16
Distribution charge (per kwhr) incl SBC and stranded cost	\$ 0.016
Energy charge (per kwh) January	\$ 0.480

EV-2 Demand Charge Alternative rate	
Fixed Charge monthly	\$ 211
Demand Charge (per kW)	\$ -
Distribution charge (per kwhr) incl SBC and stranded cost	\$ 0.235
Energy charge (per kwh) January	\$ 0.480

peak station load (kW) allowing for efficiency losses	132	132	132	132	132	132
Load factor (%)	3%	5%	7%	10%	15%	20%
kwhr per month	2,842	4,737	6,632	9,474	14,211	18,947
Monthly utility cost - Rate GV	\$ 3,726	\$ 4,666	\$ 5,606	\$ 7,015	\$ 9,365	\$ 11,714
Monthly utility cost- EV-2	\$ 2,243	\$ 3,598	\$ 4,953	\$ 6,985	\$ 10,372	\$ 13,758
average # of charge sessions per day (15 min)	6	10	13	19	29	38
Gross revenue for charge station operator (month)	\$ 1,755	\$ 2,925	\$ 4,095	\$ 5,850	\$ 8,775	\$ 11,700
Gross monthly revenue for charge station operator after fixed	\$ 1,555	\$ 2,725	\$ 3,895	\$ 5,650	\$ 8,575	\$ 11,500
Net monthly income for charge station operator rate GV	\$ (2,171)	\$ (1,941)	(\$1,711)	(\$1,365)	(\$790)	(\$214)
Net monthly income for charge station operator rate EV-2	\$ (688)	\$ (873)	(\$1,058)	(\$1,335)	(\$1,797)	(\$2,258)
Minimum Annual Required Return on capital investment (ROI)	\$0	\$0	\$0	\$0	\$0	\$0
Annual Revenue Excess/(shortfall) vs required (rate GV)	(\$26,051)	(\$23,289)	(\$20,526)	(\$16,383)	(\$9,476)	(\$2,570)
Annual Revenue Excess/(shortfall) vs required EV-2 rate	(\$8,257)	(\$10,474)	(\$12,691)	(\$16,016)	(\$21,558)	(\$27,100)



Note: Graph above does not include ANY return on initial capital investment

Upper series above is same as Eversource graph below though with linear x axis (and minor rounding errors)

Rate GV breakeven point is approximately 40 years

This does not account for replacing hardware. VW funding only covers 5 years of warranty + O&M.

High utilization load factors will inevitably result in heat stressed equipment that will need periodic component replacement

No grant or make ready. Example of (4) 150kW (NEVI configuration) DCFC

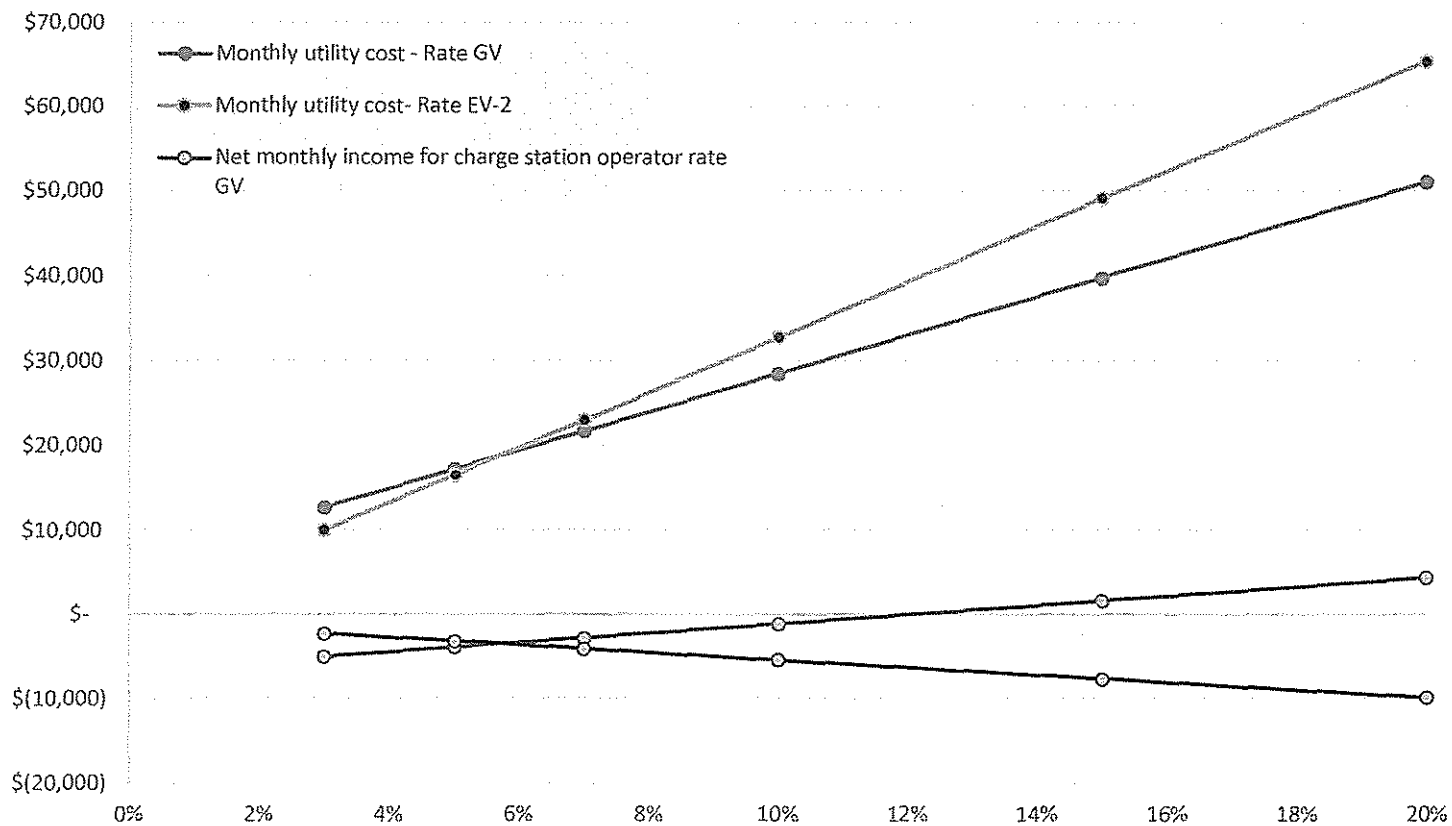
INPUTS:

# of chargers per station	4		notes
peak load per charger	150	kW	Minimum required to receive the NEVI federal funding
EV charging cost to customer (on par with gas: \$3.50/Gall)	0.65	\$/kwhr	Minimum required to receive the NEVI federal funding
fixed station operating expense per month	\$800	\$/mo	Electrify America. Evgo, Tesla: \$0.41
Station capital cost	\$1,100,000		includes insurance, O&M, vandalism
Station owner annual return: Blank for now			No Make Ready or NEVI funds.
station electrical efficiency	95%		Typical ROI expected on capital

Rate GV	
Fixed Charge monthly	\$ 211
Demand Charge (per kW)	\$ 9
Distribution charge (per kwhr) incl SBC and stranded cost	\$ 0.016
Energy charge (per kwhr) (average through year)	\$ 0.480

Rate EV-2	
Fixed Charge monthly	\$ 211
Demand Charge (per kW)	\$ -
Distribution charge (per kwhr) incl SBC and strar	\$ 0.235
Energy charge (per kwhr) (average through year)	\$ 0.480

peak station load (kW) allowing for efficiency loss	632	632	632	632	632	632
Load factor (%)	3%	5%	7%	10%	15%	20%
kwhr per month	13,642	22,737	31,832	45,474	68,211	90,947
Monthly utility cost - Rate GV	\$ 12,662	\$ 17,173	\$ 21,684	\$ 28,450	\$ 39,728	\$ 51,005
Monthly utility cost- Rate EV-2	\$ 9,965	\$ 16,468	\$ 22,971	\$ 32,725	\$ 48,982	\$ 65,238
average # of charge sessions per day (15 min)	12	19	27	38	58	77
Gross revenue for charge station operator (month)	\$ 8,424	\$ 14,040	\$ 19,656	\$ 28,080	\$ 42,120	\$ 56,160
Gross monthly revenue for charge station operator after fixe	\$ 7,624	\$ 13,240	\$ 18,856	\$ 27,280	\$ 41,320	\$ 55,360
Net monthly income for charge station operator rate GV	(\$5,038)	(\$3,933)	(\$2,828)	(\$1,170)	\$1,592	\$4,355
Net monthly income for charge station operator rate EV-2	(\$2,341)	(\$3,228)	(\$4,115)	(\$5,445)	(\$7,662)	(\$9,878)
Minimum Annual Required Return on capital investment	\$0	\$0	\$0	\$0	\$0	\$0
Annual Revenue Excess/(shortfall) vs required (rate GV)	(\$60,452)	(\$47,192)	(\$33,932)	(\$14,042)	\$19,108	\$52,259
Annual Revenue Excess/(shortfall) vs required (rate EV-2)	(\$28,093)	(\$38,734)	(\$49,375)	(\$65,336)	(\$91,938)	(\$118,540)



Note: Graph above does not include ANY return on initial capital investment

EV-2 lowers the annual loss at low utilization

Neither rate allows owner to achieve positive income, let alone return on initial investment, until ~15% Load factor (>60 charge sessions per day!)

This does not account for replacing hardware. NEVI funding only covers 5 years of warranty + O&M.

High utilization load factors will inevitably result in heat stressed equipment that will need periodic component replacement

80% Grant Funded, No Make Ready Example of (2) 62.5 kW DCFC

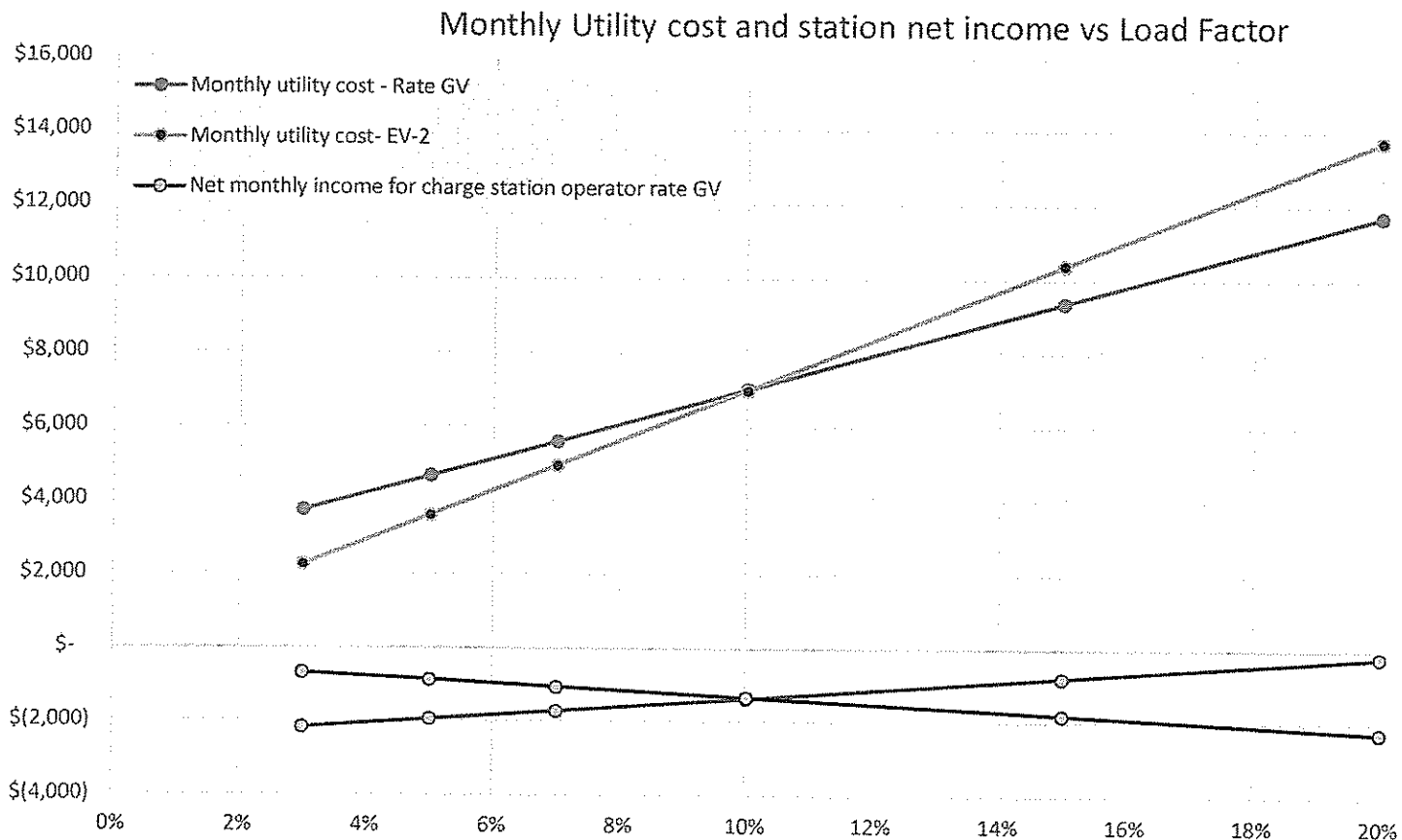
INPUTS:

		notes
# of chargers per station	2	
peak load per charger	62.5 kW	Typical VW RFP hardware
EV charging cost to customer (on par with gas: \$3.50/Gall)	0.65 \$/kwhr	Electrify America. Evgo, Tesla \$0.41
fixed station operating expense per month	\$200 \$/mo	includes insurance, basic O&M, vandalism
Station capital cost	\$90,000	80% grant funding, No make ready program
Station owner annual return: Blank for now		Typical expected ROI on capital
station electrical efficiency	95%	

Rate GV	
Fixed Charge monthly	\$ 211
Demand Charge (per kW)	\$ 16
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80% Grant Funded, No make ready. Example of (4) 150kW (NEVI configuration) DCFC

INPUTS:

# of chargers per station	4
peak load per charger	150 kW
EV charging cost to customer (on par with gas: \$3.50/Gall)	0.65 \$/kwhr
fixed station operating expense per month	\$800 \$/mo
Station capital cost	\$300,000
Station owner annual return: Blank for now	
station electrical efficiency	95%

notes

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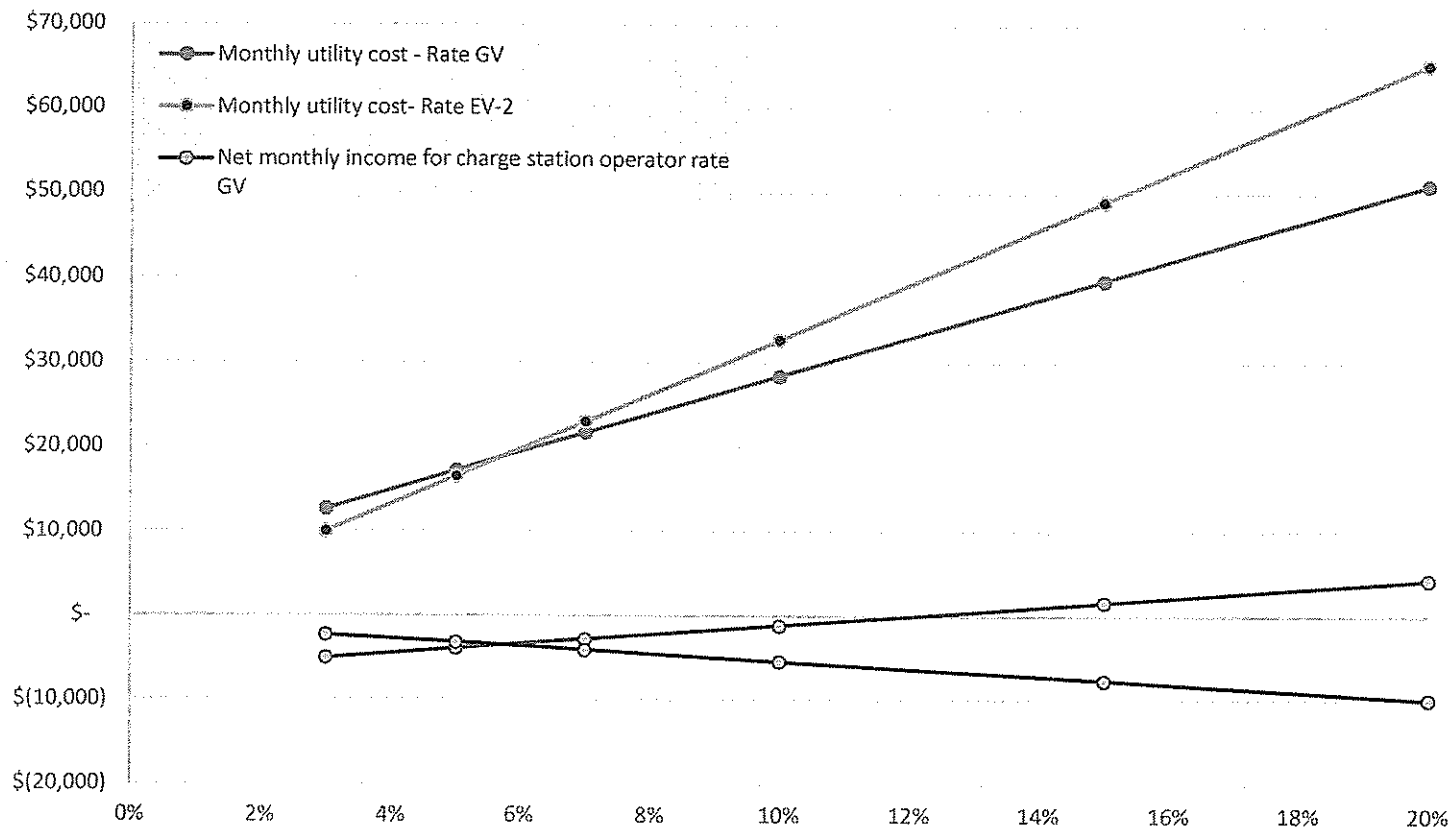
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