



**Sustainable
Energy
Advantage, LLC**

RI Renewable Energy Growth Program: Carport Adder and Benefit-Cost Analysis, Revised November 2021

Sustainable Energy Advantage, LLC
Mondre Energy, Inc.

Carport Adder Analysis



REG Carports Selected, & 2021 Cost Data

Enrollm ent Period	Facility	Location	kWdc	Actual or Target COD	Incremental Carport Cost/kWdc
2020-1	Project 1			4/23/2021 (Actual)	
2020-1	Project 2			8/2022 (Est.)	
2020-2	Project 3			4/2023 (Est.)	
2021-1	Project 4			7/2023 (Est.)	\$1,099.37 (Revised)
2021-1	Project 5			7/2023 (Est.)	\$1,597.65 (Included)
2021-2	Project 6			Not Available	\$1,503.50 (Added)

Text in red denotes data added or adjusted subsequent to September 23, 2021 stakeholder presentation.



Carport Cost Input Assumptions

Commercial Category

Cost Case	Incremental Cost Input	Notes
Low	\$1,011 \$1,277	Publicly available ¹ carport quote for 500 kW system
High	\$1,277 \$1,400	Average of incremental costs from 2021 Open Enrollments 1 + 2.

Large Category

Cost Case	Incremental Cost Input	Notes
Low	\$1,000 \$1,254	Publicly available ¹ carport quote for 1,000 kW system
High	\$1,254	Publicly available ¹ carport quote for 1,000 kW system

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(1) <https://www.solarelectricsupply.com/commercial-solar-systems/solar-carport>



Carport Adder: Revenue Requirement Results

Required Adder Revenue, ¢/kWh

Size Category	Modeled Size (kW)	Low Cost/ High Production	Low Cost/ Low Production	High Cost/ High Production	High Cost/ Low Production
Commercial I	500	8.2	11.4	8.9	12.2
Commercial II	1,000	8.2	11.0	8.9	11.8
Large	5,000	8.3	11.7	8.3	10.7
<i>Weighted Average</i>		8.3	10.8	8.4	11.0
"Carport Adder Revenue Requirement" (Rounded to nearest 0.25 ¢/kWh)		8.25	10.75	8.50	11.0

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Benefit-Cost Analysis



NPV of Quantified Benefits

- Total net present value of quantified benefits, assuming a societal discount rate of 2.5%

	Commercial (\$/kW)		Large (\$/kW)	
	Low Benefits	High Benefits	Low Benefits	High Benefits
Interconnection Cost Savings	\$85	\$106	\$85	\$106
Carbon Sequestration	\$17	\$237	\$46	\$105
Ecosystem Services	\$2	\$3	\$2	\$3
Avoided Property Value Loss	\$824	\$3,295	\$183	\$366
Total (Weighted by Avoided Project Type)	\$927	\$3,641	\$316	\$581

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BCA Results

- 2.5% Societal Discount Rate, 8.25 cent Adder
- **Bolded** results denote rows with Benefit-Cost Ratio greater than 1

Case	Project Category	NPV Total Benefits (\$/kW)	NPV Total Costs (\$/kW)	Benefit-Cost Ratio
Low Benefits, Low Costs	Commercial	\$608	\$1,378	0.44
	Large	\$354	\$1,414	0.25
High Benefits, Low Costs	Commercial	\$2,294	\$1,378	1.66
	Large	\$660	\$1,414	0.47
Low Benefits, High Costs	Commercial	\$608	\$1,536	0.40
	Large	\$354	\$1,575	0.22
High Benefits, High Costs	Commercial	\$2,294	\$1,536	1.49
	Large	\$660	\$1,575	0.42

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BCA Results: Sensitivity Analysis

Case	Project Category	Benefit-Cost Ratio		
		8.5 ¢ Adder	10.75 ¢ Adder	11.0 ¢ Adder
Low Benefits, Low Costs	Commercial	0.43	0.34	0.33
	Large	0.24	0.19	0.19
High Benefits, Low Costs	Commercial	1.62	1.28	1.25
	Large	0.45	0.36	0.35
Low Benefits, High Costs	Commercial	0.38	0.30	0.30
	Large	0.22	0.17	0.17
High Benefits, High Costs	Commercial	1.45	1.15	1.12
	Large	0.41	0.32	0.31

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