

DOE Program Review and Use Case

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DOE's Solar District Cup

- Gain Experience with Innovative Renewable Energy Design
- Develop Real-World Solutions
- Engage with Industry Professionals
- National Recognition





UT Dallas' Goals

- Most Sustainable Research University in America
- "A responsible global citizen that enthusiastically attends to our duty to create a sustainable environment,"
- Platinum STARS Rating







Solar Plus Storage

- Ground-Mount, Rooftop, Carport, Parking Structure and Agrivoltaics
- EV DC fast chargers
- Fleet Electrification (F-150 Lighting)
- Energy Resilience (Backup Power)
- Prioritize Economic, Academic, and Reputational Value



Data Provided

- Campus Plans and Reports
- Load Data
- Authority Having Jurisdiction (Zoning)
- Electric Distribution Heatmaps







Software

- Aurora Solar
- HelioScope
- System Advisor Model
- ReOPT
- Solar PV Financial Models





Results

- 5 Main PV Sites
- Energy Storage as Backup-Only
- Input from Multiple Industry Professionals
- Comprehensive Report





Financials

- Solar Financial Models
- SAM
- System Cost igodol
- **Construction** loan
- Taxes
- Incentives
- PPA
- IRR
- **Customer Savings**

		DC (W)	AC (W)
Construction Cost/Watt	17	\$1.80	\$1.98
Roof Upgrade & Warranty	e	\$0.00	\$0.00
Interconnection Costs		\$0.07	\$0.07
Developer Margin		\$0.20	\$0.22
Total cost per watt		\$2.07	\$2.27
Size of System in W	waters -	1,200,000	1,090,909
Panel and Hard Eq. Cost per W \$1.28			\$1.41
Est. P50 Annual Production (kWh per kW DC)			1,550
Annual Panel Degradation Rate			0.50%
Est. Delta, P95/P50			93.50%
Est. P50 kWh/year Production			1,850,000
Est. P95 kWh/year Production			1,739,100
we to DC Conversion Fact	SYSTEM COS	TS	110%
Aggregate Constr. Cost	analiew cos		\$2,160,000
Agregate Const. Cost			SO
Interconnection Costs			\$78,000
Aggregate Developer Mar	gin		\$240,000
Site Purchase Price	92.111		50
Construction Loan Cost (I	DC, Fees & Closing C	(ost)	\$287,200
Closing Costs and Fees			\$43,200
Aggregate Project Cost			\$2,808,400
Estimated Utility Charge E KWh Consumption (Awg. I Customer (NPV) Discount Terminal Value (% of Purc MACESE Basis for Depreciation	Escalation Monthly) Rate hase Price) for Buyo HERECIATION INFO	ut Caks.	4.00% 13,436,726 8.00% 20.00% \$2,169,914
Martin			10000
HADY	MALAS	6422.002	C422.002
2	20%	\$694,322	\$694,373
	19,20%	\$416.623	\$416.623
4	11.52%	\$249,974	\$249,974
5	11.52%	\$249,974	\$249,974
6	5.76%	\$124,987	\$124,987
4	Syrs, MACRS, HY)	\$2,169,914	\$2,169,914
1.5		1000 (S10000)	1003800060
and the second	ITC AND ITC ADDE	R TABLE	680 X 440
Туре		Rate	Eligible?
Base Rate for ITC		30.0%	Yes +
Domestic Content		10.0%	No
Energy Community		10.0%	NO
Low-Income Allocation		10.0%	Nu
Terminati	on Value - % of Agg	regate Project Cos	t
Taken as a	Sale @Term End (F	or IRR & NPV Calc	5
Term Value - M	12.0%	15.0%	18.0%

Term. Value - S

\$337,008

\$505.512

\$421,260



INCOME & EXPENSE PROJECT	IONS	
PPA Price per kWh (AC)	50.099	
PPA Price Annual Escalator	2.50%	
SRECS		
SRECS Applicable?	No	
SREC Price (S)	\$110	
Single SREC Size (kWh/SREC)	1,000	
SREC Annual Rate Increase (Decrease)	2.50%	
SREC Term (Yrs)	10	
Property & Equipment Taxes		
Annual Site Property Tax Rate	1.25%	
Initial Site Property Base Value	50	
Site Property Annual Adjustment Rate	2,50%	
Annual Equipment Tax Rate	0.00%	
Pers.Prop. Eq. Tax Base	\$1,536,000	
Pers.Prop. Eq. Book Depr. Rate	5:00%	
Site Costs		
Site Purchase or Lease?	Loose	
Site Value or Purchase Price	50	
Site Lease Fixed or % of Revenue?	Fined +	
Site Lease Include Site Lease Taxes?	No *	
Annual Site Lease Pmts (% of Rev.)	1.50%	
Annual Site Lease Fixed Cost	\$0	
Annual Site Lease Escalator	2:50%	
Other Operating Expenses		
Annual Ops & Maint, Costs per W (DC)	\$0.010	
Annual O&M Escalator	2.00%	
Insurance Expense per Year per W (DC)	\$0.010	
Insurance Escalator	2,00%	

and the second s		
estment Tax Credit (ITC)	30.0%	
le - Disc. to Purch. Price	0.0%	
le - # of Annual Pmts.	2 4	
le - First Year Payment	1 .	
rears)	10	
g Rate (\$/MWh)	\$26.000	
Inflator Rate (%)	2.50%	
ction of ITC Eligible Basis	5.00%	
gible Property Value	\$ 2,626,940	
flar Value	\$ 788,082	
TAX DETAILS - State		
tate income Tax Rate	0.00%	
in or Off?	 Inc. 	
redit Rate	7.5%	
redit Basis	\$2,169,914	
Tax on Electricity	0.00%	
Partnership Filp Data		
rtner, Pre-Flip Share 80.0		
Partner, Pre-Flip Share	20.00%	
Partner, Post-Flip Share	5.00%	
Partner, Post-Flip Share	95.00%	
% of Equity Investment	35.00%	
; % of Equity Investment	65.00%	
i Flip, Target Year (>=5)	5	
rget Flip IRR	7.50%	
ish Premium Requirement	3.5%	



Development Plan

- Zoning and Compliance
- Land Use
- Potential Complications
- Project Timeline





Design Philosophy

- Five total solar panel installations
- Carport, rooftop and ground mounted
- Balancing efficiency and public interest





Parking Lots A and B

- Size of 4.8 MW
- Priced around 3.50 per watt
- Designed to be public-facing
- Bifacial





Northeast Fields

- Size of 2.96 MW
- Most Economical System
- Single Axis Tracking





Rooftop Solar

- Green Hall, Admin building and Student Services Building
- 1.2 MW Between All 3





Questions?