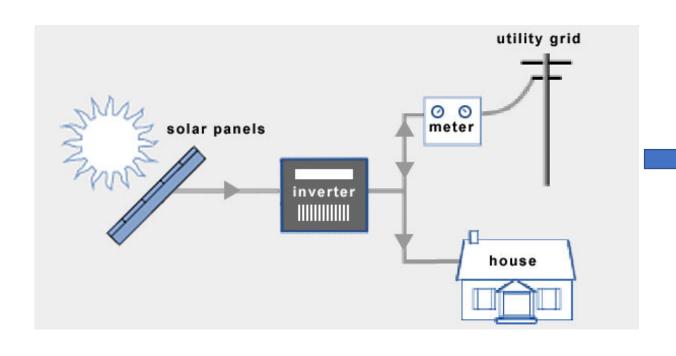




Modern Energy Solutions



Grid-Tied Solar PV System:

- Most common installation, less costly
- Cannot operate while grid is down
- Net-metering (what utility pays for excess generation) is critical to financial value
- Panel and racking warranties are typically 25 years; inverters are 12 years but can be extended



Passed in 2017

 Extensive Stakeholder process including Duke, Clean Energy and Consumer Advocates

Significant Changes for Duke

- Created Competitive Procurement for Utility Scale
- Created NC Solar Rebates
- Annual caps
- \$75,000 limit per meter for tax-exempt orgs

Leasing Rules

- Lessors have to be approved by NCUC
- Allows NCUC to examine all leases within NC
- Puts a cap on the number of leases
- Explicitly disallows mechanisms that tie cost with production

Lease Vs Outright Purchase:

	Outright Purchase	Lease
Qualitative benefits of solar	yes	yes
Ownership for tax purposes	yes	no
NC Solar Rebate	yes	yes
Net-metering	yes	yes
Maintenance	varies	yes
Production Guarantee	varies	yes



Estimated 2018 Energy Use:

- CHES: 29,443 (2453 monthly ave)
- Estimated Meeting House: 7,763 (646 monthly ave)

Small General Service (SGS)

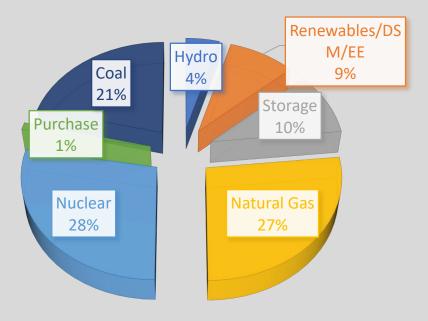
• Tired-cost per kWh- you pay less for every additional kWh after specific thresholds (3000 kWh per month)

With 2019's rates:

- CHES: \$3,670- ave blended rate of \$.125 per kWH
- Meeting House: \$1,148- ave blended rate of \$.148 per kWh

Duke Energy Carolina's Generation Mix

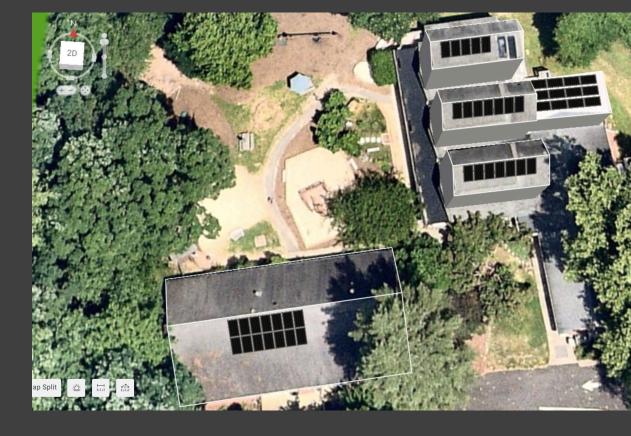
DEC ENERGY MIX



^{*}Duke's Integrated Resource Plan 2018

^{**}https://www.epa.gov/sites/production/files/2018-02/documents/egrid2016_summarytables.pdf

- Estimated Annual Production:
 - School: 12,523 kWh
 - Meeting House: 6,434 kWh
- Modeled Annual Energy Savings:
 - School: \$1,315
 - Meeting House: \$746
 - We used a load profile of a church for Meeting House and primary school for CHES
- Equivalent to **CO2** emissions* annually:
 - School: 8.9mt
 - Meeting House: 4.5mt



School: 9.6kw dc

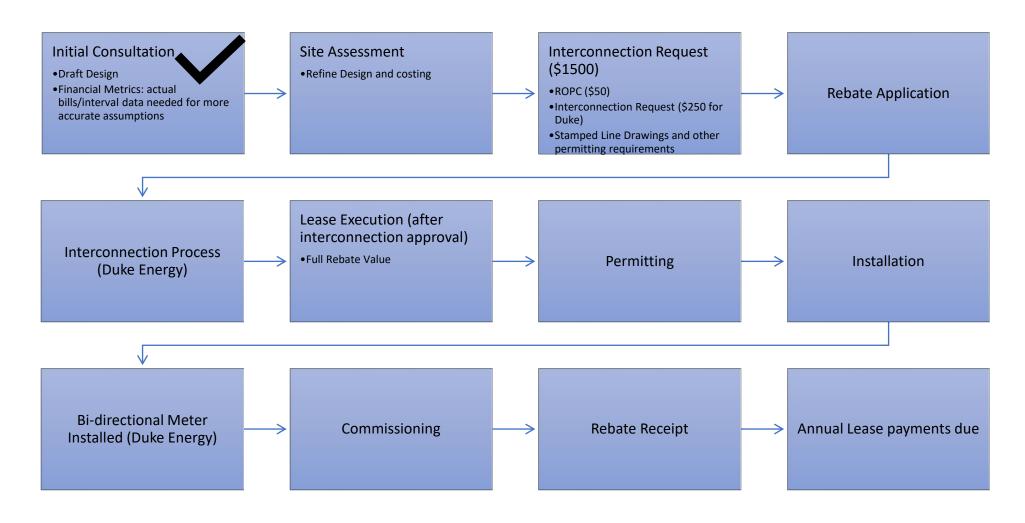
Meeting House: 4.3kw

dc

Financial Analysis

Chapel Hill Friends			
		CHES	Meeting House
Size kW DC:		9.6	4.3
Annual kWh production:		12,523	6,434
% of annual consumption	43%		83%
Estimated Annual Savings	\$	1,314.92	\$746
Total Cost*		(\$26,142)	(\$12,862)
Rebate		\$6,750	\$2,850
Annual Lease Amount		(\$1,500)	(\$800)
FMV Estimate		(\$4,392)	(\$2,012)
15 year NPV estimate		\$1,176	\$1,360

Steps in Process



Caveats:

- The NC Solar Rebates and net metering are critical to lease structure as cash flow positive, and this means Duke will keep the Renewable Energy Credits.
- Cash-Flow positivity depends on production, increasing rates, and no changes in net metering
- Draft lease metrics assume acceptable credit history, and no major unexpected costs



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