Atrisco Heritage Academy HS – Battery Storage for Peak Shaving

2022 DOE OE Energy Storage Peer Review

Presentation # 103

A collaborative effort supported by

- **U.S. Dept. of Energy**
- **Sandia National Laboratories**
- **State of New Mexico**

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APS' largest campus, largest utility bills.

Summertime electricity bills over $50K; demand charges more than 50%.

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Center of the Community

Large disadvantaged population.

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Demographics

- Serves 2200 students (impacting thousands of families)
- 14% from disadvantaged households (below Federal poverty line)
- 99% eligible for Federal free or reduced lunch (APS average is 65%)
- 20% English language learners
- 28% Special education
- On-site community health clinic

An ideal location.

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Avengers Movie 2012 – Opening Scene

Nick Fury's Helicopter Arrives at Avenger's Headquarters.

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Project objectives

- Charge from grid ‘off-peak.’
- Deploy strategically during ‘on-peak.’
- Reduce daily peak demand to below 500 kW.
- Test case for replication elsewhere in District.
- Potential for resiliency during power emergency.

Is it cost-effective?

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Added PV to improve the payback

- 850 kW to optimize payback
- 2200 PV panels . . . one per student!
- Without PV – 17 years*
- PV *plus* battery– 13 years

* Entirely dependent on utility rate structure.

Doubled project cost, but provides net savings of $3.5 M over life of battery.

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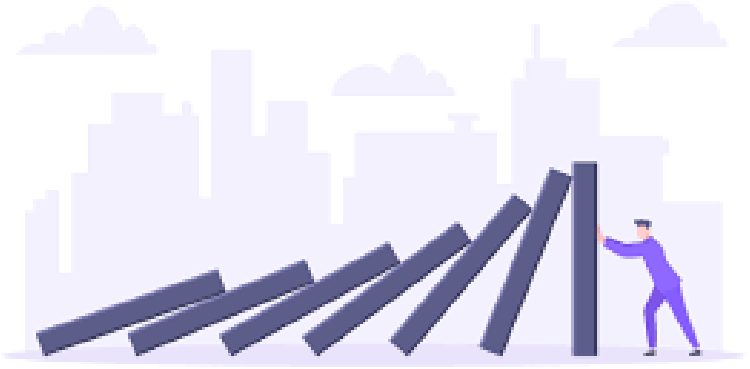
Resiliency

- Adding PV to battery storage allowed opportunity for ‘islanding’
  - Conduct feasibility study to identify grid disconnect requirements. critical loads. etc.
    - Create islanding implementation plan & design
      - Pursue funding for implementation project



Many new opportunities opened up.

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Tesla Mega Pack 2

Dimensions:

- 8' - 3" Tall
- 5' - 6" Deep
- 25' - 6 " Long
- 56,000 lbs
- 28 Tons

BESS Site Location

Largest Tesla installation in New Mexico – 721 kW / 2884 kWh

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BESS Site Location

Available for on-site 'Learning Lab.'

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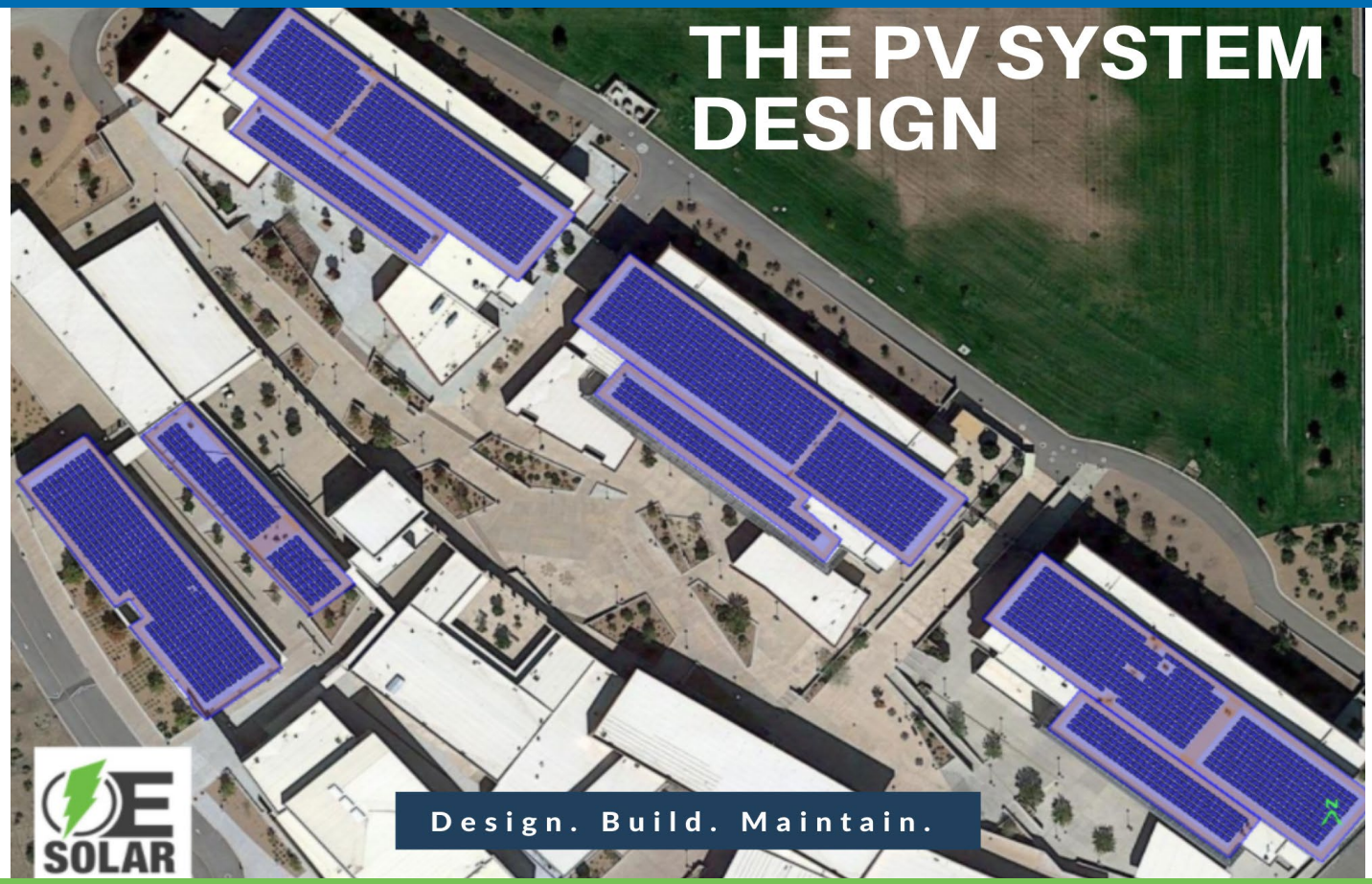
PV layout



Lots of roof available; triggered significant roof repairs.

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Lessons learned

- Design-Build delivery method is not typical for our Procurement Department, and presented challenges.
  - Life cycle and performance calculations must account for battery and solar degradation, as well as escalating utility rates. Budget accordingly!
    - New technology and high-production systems may pose concerns for the local utility company which could impede/delay an interconnection agreement.
      - Roof-mounted photovoltaics on existing buildings means roof condition and warranty must be examined. Be prepared for costly repairs!
        - Data collection and analysis – especially by third party entities – has many facets which must protect the interests and privacy of all parties.
          - EVERYTHING takes longer than expected…

And so many more lessons to come.

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The importance of partners

- Expertise, experience
- Detailed, reliable analysis
- Many eyes, many viewpoints
- Shared financial burden

A win for everybody!