



Intelligent Generation

Optimizing Value from Incentives for Solar + Energy Storage

Agenda

- Inflation Reduction Act
- The Energy Storage Value Stack
- Electricity Cost Savings – Capacity and Transmission
- Earning Potential – Grid Services
- Optimizing Value
- Case Studies
- Sample Economics

Inflation Reduction Act

- Passed by Congress and signed August 23, 2022
- \$270 billion allocated to climate action, including:
 - \$158 billion in clean energy incentives
 - \$30 billion for nuclear power
 - \$13 billion in electric vehicle incentives
 - \$37 billion in advanced manufacturing
 - \$20 billion for smart agriculture
- Key provisions that require or include enhanced provisions for domestic content of equipment
- Thus far, over \$89 billion in investments in manufacturing in the U.S. have been announced, creating over 100,000 new jobs*

* CNBC, Feb. 9, 2023

Current Federal Incentives

Federal

- Investment Tax Credit (ITC)
 - Enhanced and extended by Inflation Reduction Act
 - 30% for solar, battery, and wind and certain emerging technologies
 - Batteries now qualify stand-alone
 - Additional 10% for U.S. produced equipment
 - Additional 10% for location in certain “energy communities” and low-income areas
 - Direct pay for non-taxable entities (non-profit, government, education)
- Accelerated MACRS depreciation
 - 80% bonus depreciation in 2023; decreases 20% per year

Federal Incentive Details

- Prevailing wage labor and apprenticeship requirements
 - Without these, the ITC drops to only 6%
- Additional 10% ITC for equipment meeting domestic content requirements:
 - 40% of steel, iron, and manufactured products have to be produced domestically to qualify
- Additional 10% for locating in low-income communities
- Additional 10% ITC for projects in “energy communities”
 - Brownfield sites
 - Metropolitan Statistical Areas with 0.17% employment or 25% local tax revenue from coal, oil, or natural gas and unemployment above the national average
 - Census tract or adjoining tract where coal mine closed since 2000 or coal-fired power plant closed since 2010
- Specific qualifications and requirements have not yet been clarified by the Treasury Dept.
- Coverage: Solar, wind, hydrogen, microgrids, controllers, interconnection costs

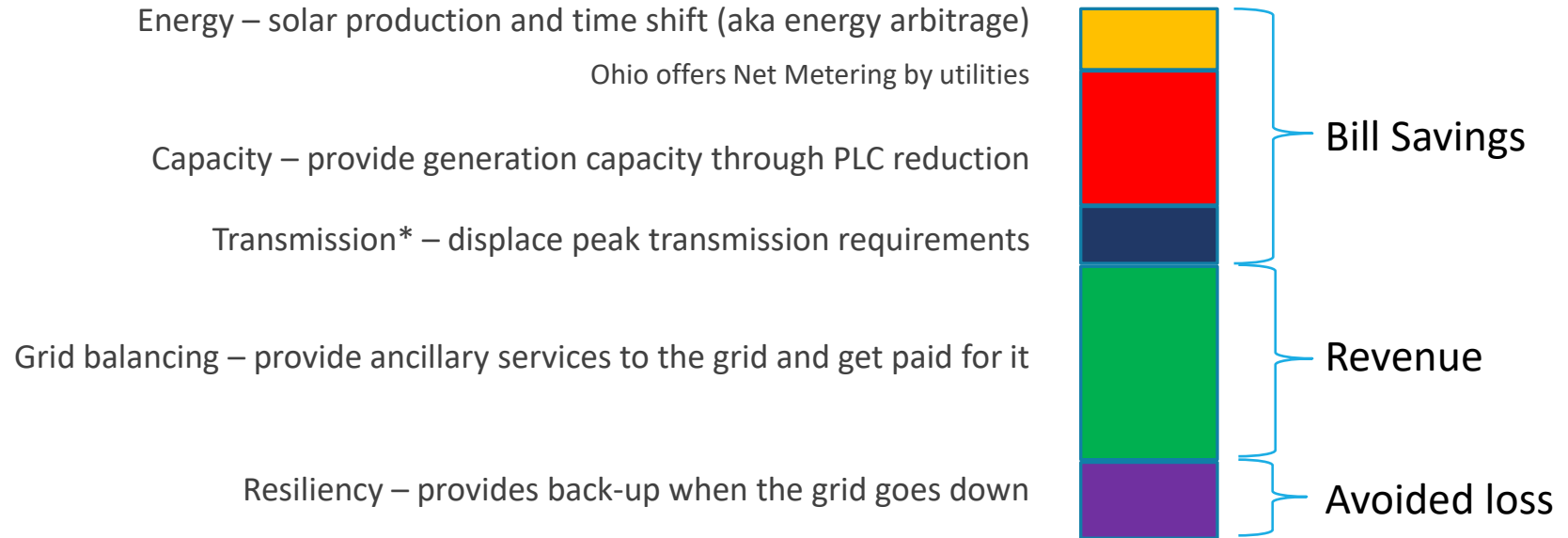


Electric Vehicle Incentives

- EV incentives
 - Commercial clean vehicles credit of 15% of vehicle cost or incremental cost (whichever is cheaper) until 2033
 - Incentive increases to 30% if the vehicle is not powered by Diesel or gas engine
 - Max credit of \$7,500 for vehicles under 14,000 pounds or \$40,000 for larger vehicles
 - Domestic content and assembly requirements limit choice of vehicles eligible for credit
- EV chargers
 - 30% tax credit on the cost of the charger hardware up to \$30,000 for businesses
 - AEP rebates may also be available up to \$30,000

Solar+Storage: Operational Savings

The value stack:



* Transmission savings may not be available in Ohio

Strategies for bill reduction – Capacity and Transmission

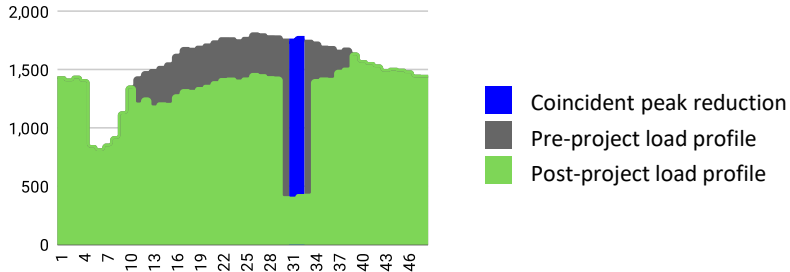
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Capacity & Transmission*

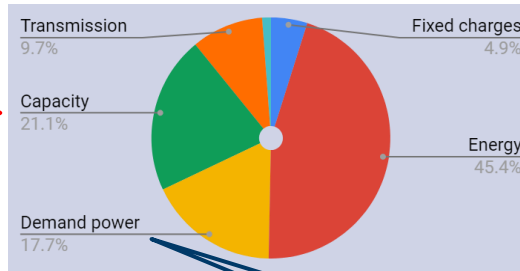
- Together often near **30% of the annual bill**
- They are also a power charge measured in kW
- Rarely explained and generally confused for some variation of Demand power that you may only reduce through Peak Shaving.
WRONG
- Possible to lower or eliminate based on smart choices 30-40 hours per year



Load profile pre and post comparison



* Transmission savings may not be available in Ohio



1

Fixed by state rules,
little you can do

2

1. **Consume less** (energy efficiency – Start here, if not done yet)
2. **Negotiate** a better rate
3. **Generate your own** electricity (Solar, Wind, Generators)

3

Peak Shaving

Actively contain peak consumption during business hours.

But can you?
At what cost to your business?

Value Drivers: Frequency Regulation

Frequency Regulation (FR) is required by the grid to address the fluctuations of demand and renewable energy generation to support stability on the grid.

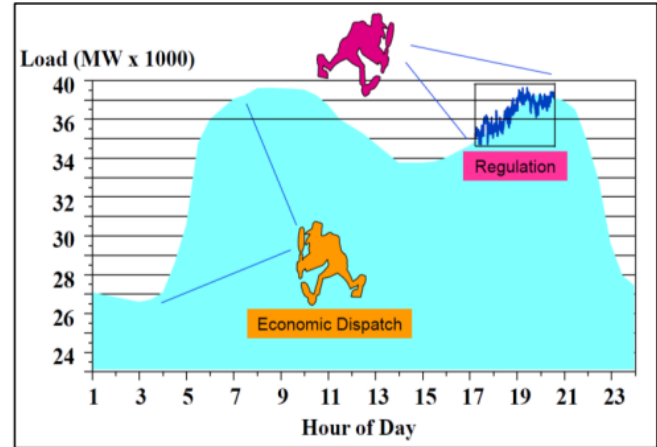
Onsite batteries can provide FR by injecting or absorbing power according to market signals.

FR services are sold in an auction-based market. IG optimizes bidding and market participation for economic return.

FR is over 90% correlated with the price of energy, which tends to rise with inflation¹

The Federal Energy Regulatory Commission has increased opportunities for on-site battery participation in the FR market.²

The long-term average value of FR in PJM is \$33.10, the base assumption of starting FR value for IG projects. Over the past year the average has been \$58¹



RMCP Quick Stats	since 1 Oct 2012 (market start)	past 365 days
50% percentile	\$21.5	\$39.5
average	\$33.1	\$58.1
max	\$4,699.3	\$4,699.3

1. Based on analysis of PJM Data Miner (<https://dataminer2.pjm.com/list>)
2. Learn more about FERC2222 (<https://www.ferc.gov/media/ferc-order-no-2222-fact-sheet>)



Intelligent Generation

Empowering Businesses to
Engage the Clean Energy Grid



Making economic sense of distributed energy assets



EARN

Earn revenue in
wholesale
power markets



SAVE

Save energy
and power
expenses



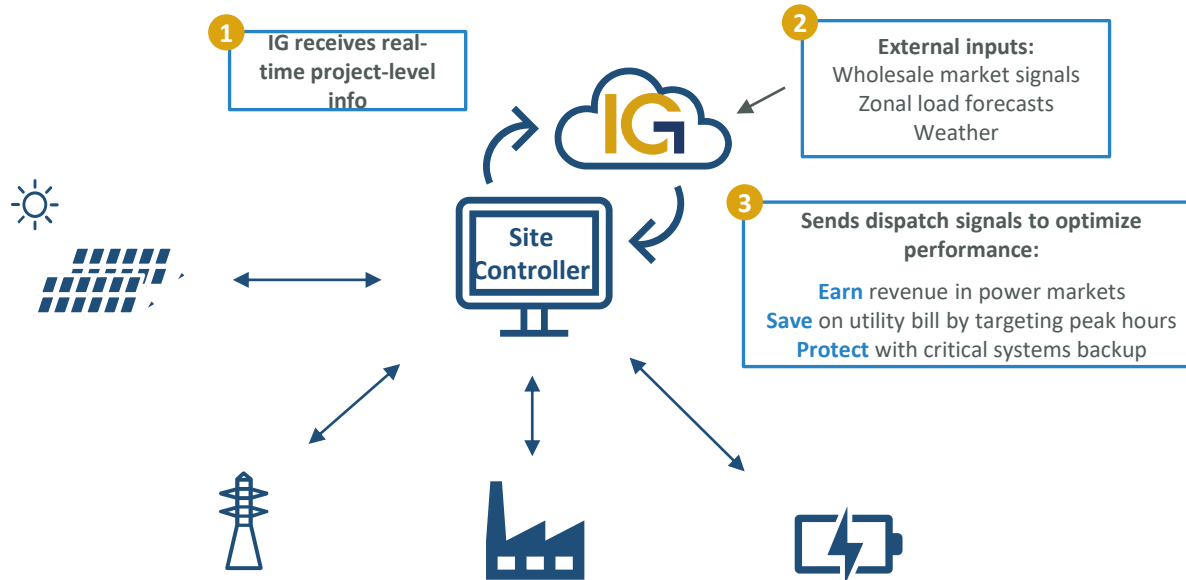
PROTECT

Protect critical
systems with
battery backup

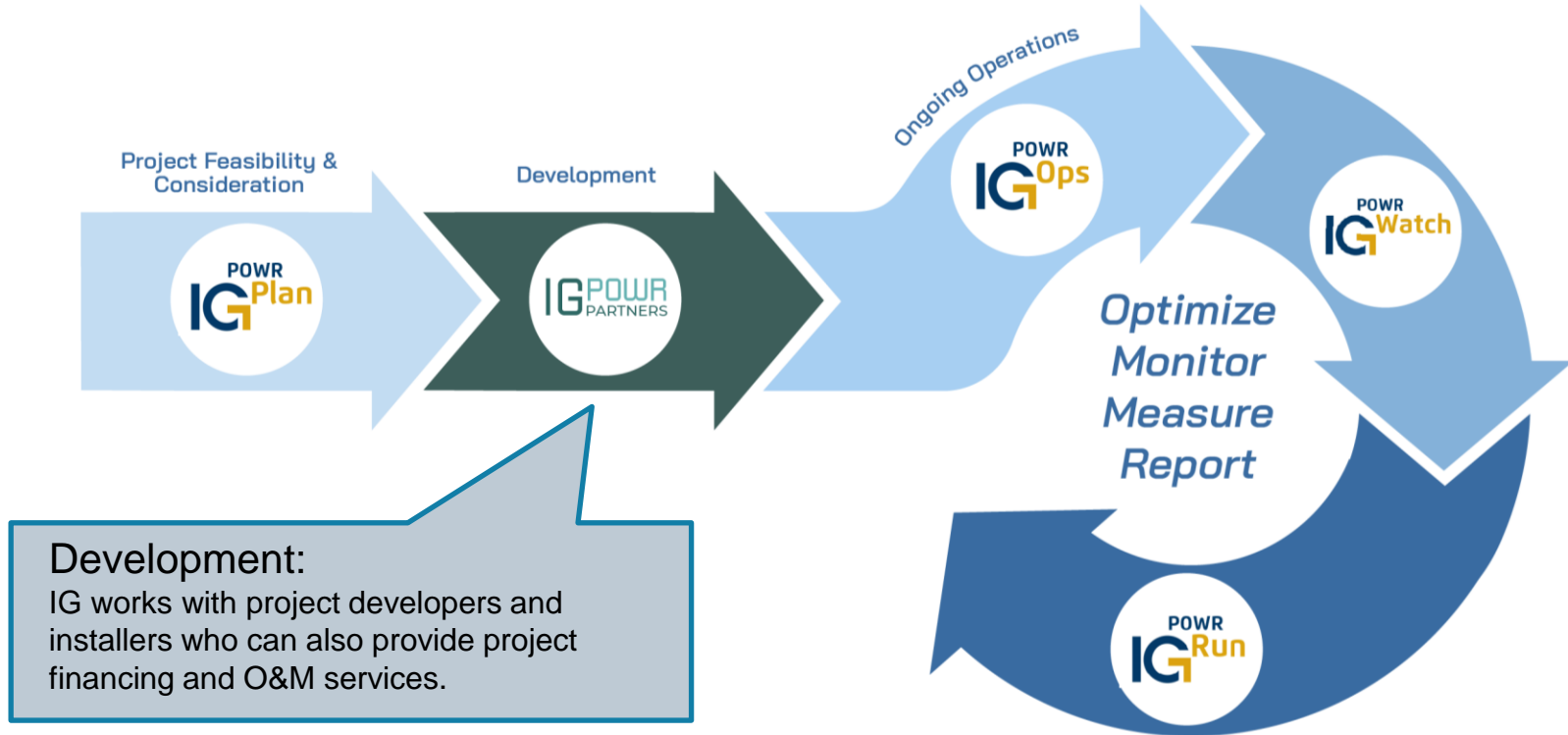
- First to implement and operate behind-the-meter batteries in PJM and MISO
- Delivering the energy storage value stack since 2014

IG's cloud-based POWER Suite is the economic engine that delivers maximum economic benefit for a customer.

Cloud-based dispatch engine optimizes renewables project economics by deploying solar, battery storage based on site conditions and market opportunities



Solar + Storage Project Lifecycle



Industrial Project Examples



Abt Electronics (2017)
Glenview, IL

Solar 508+1800 kW
Backup gen 1600 kW
Storage 500 kW



MAGID Glove (2020)
Romeoville, IL

Solar 3800 kW
Storage 2000 kW



Libman Co. (2020)
Arcola, IL

Solar 1850 kW
Storage 2000 kW



G&W Electric (2022)
Bolingbrook, IL

Solar 2000 kW
Flywheel 1300 kVA
Flow Storage 2000 kW
Backup gen 2000 kW
Full Microgrid setup

Case Study: ABT Electronics / TESLA LiOn Battery

- World's largest single store appliance company. Near Chicago O'Hare. Family owned, trusted since 1936. Growth 100% organic.
- 1.5 million sq ft warehouse + office and retail
- \$400M annual revenue, 2500 appliance deliveries per day, 20% of sales online
- Despite cheap grid power (7 cents), they had a clear power strategy:
 - ✓ Go green with Solar
 - ✓ Protect operations from outages
 - ✓ Guarantee power quality to back-office operations
- **The Project: double island micro-grid integrating an existing generator, 1800 kW solar PV and a 500 kW TESLA battery.**
- **Total Payback: under 5 years.**

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Abt

Pleasing People...Since 1936

Case Study: G&W Electric Microgrid/Vanadium Flow Battery

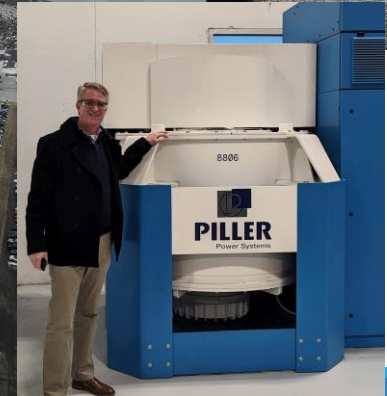
- Major manufacturer of medium voltage utility power equipment, including smart grid.
- 24x7 manufacturing including plastics injection molding, ceramics, assembly, office, warehouse, and engineering/R&D.
- Power outages, sometimes only momentary, causing millions in lost production time and materials.
- **The Project: Islanding micro-grid integrating an existing generator, 2000 kW solar PV, 1300 kVA flywheel, 2000 kW nat gas generation, and a 2000 kW/8000 kWh CellCube Vanadium flow battery.**
- **Total Payback: under 4 years.**
- **Already saved millions in avoided losses in first year**

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G&W
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Current Example Project – Ohio Project Economic Forecast





Project
Opportunity



Project: 700 kW Solar and 1000 kW, 4 hour discharge battery

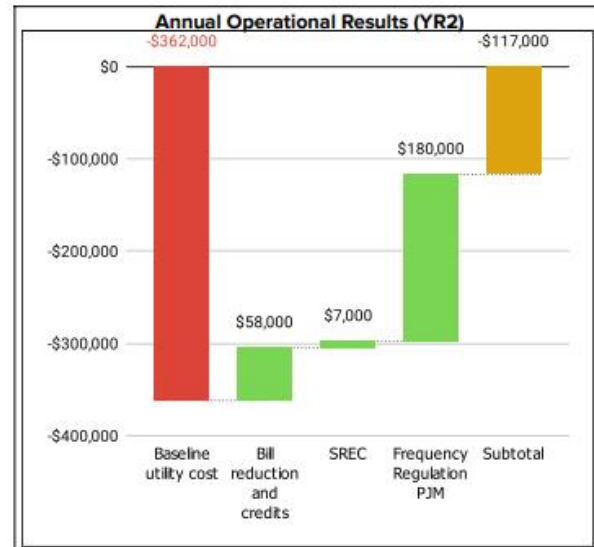
Turnkey Budget: \$4,300,000

Emission Reduction
4,589 Tons CO₂/yr

495 US homes'
CO₂ footprint per year

Financial Summary Pretax	
Percent paid-back upon switch-on	59.7%
EBITA 10YR IRR	6.9%
Simple PayBack years	6.5



Your baseline annual utility cost (all-in) \$357,000

EARN Project Revenues /yr \$187,000

SAVE on bill /yr \$58,000

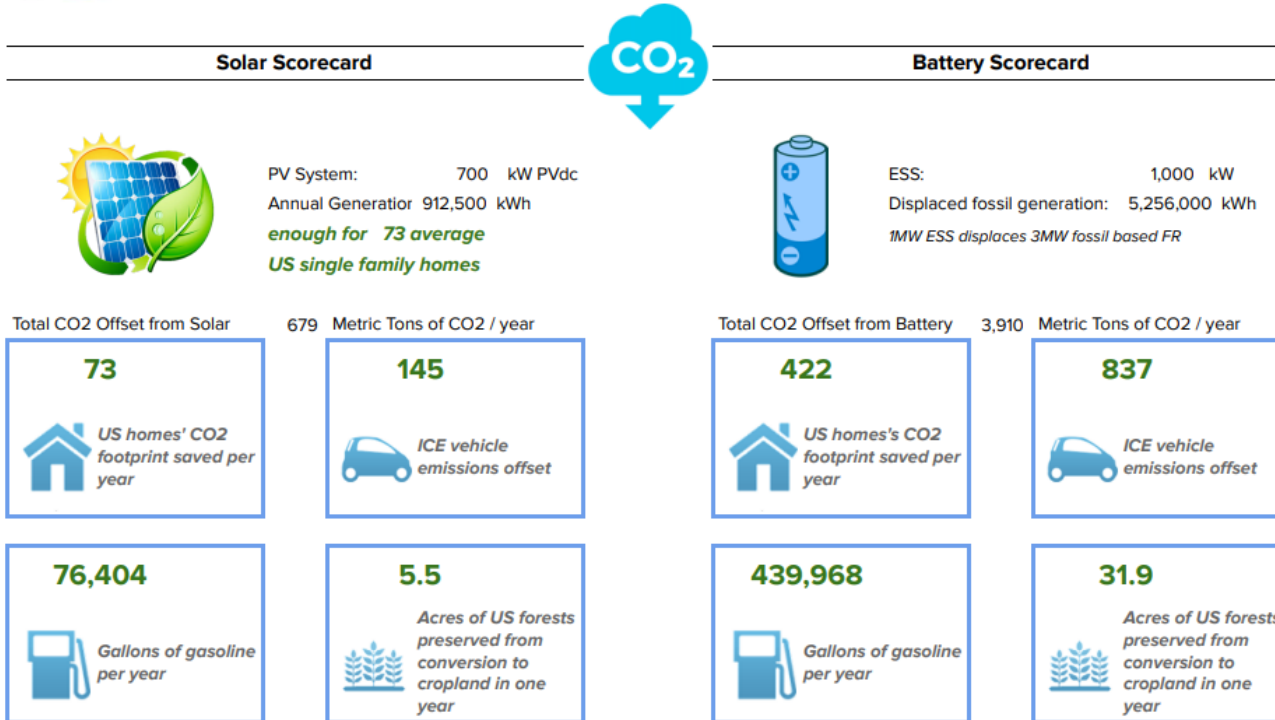
PROTECT Backup Power \$200,000

First Year Benefits & Incentives

Federal 40% ITC under IRA \$1,705,000

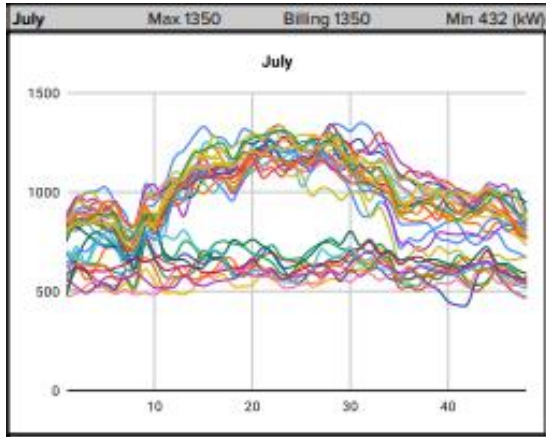
YR1 depreciation with bonus of 80%
(in service 2023) \$831,000

Current Example Project - Environmental

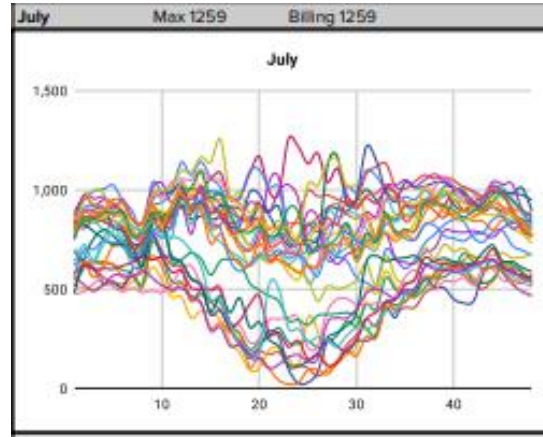


Source: <https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references>

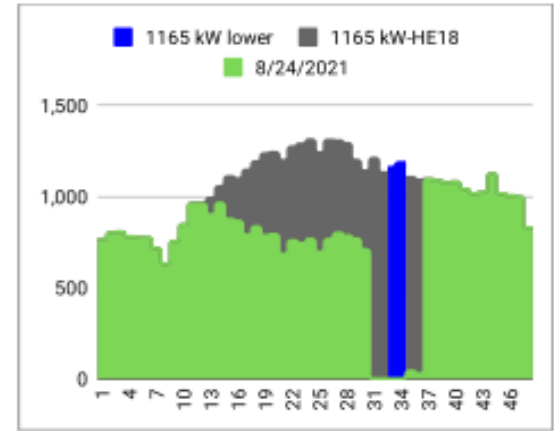
Load Profile Impact



Original Load Profile



Load Profile with Solar



Capacity PLC Reduction

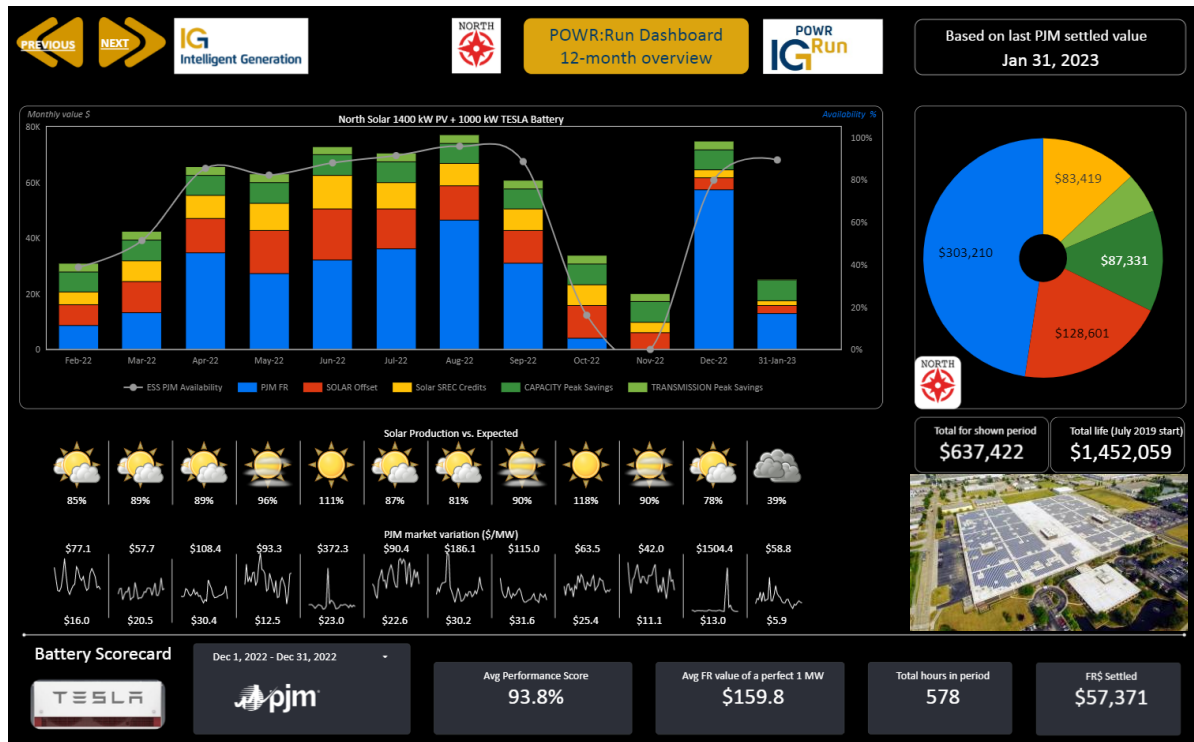


PURPOSE

- Let customers easily see financial performance of projects

KEY FEATURES

- Financial dashboard with daily performance update
- Covers entire project and all value streams
- Granular drill down by asset by hour
- Full reconciliation to monthly RTO settlements
- Monthly Customer invoicing



Contact Information

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