FULTON INDUSTRIAL BOULEVARD

CLEAN ENERGY TOOLKIT

A GUIDE FOR CLEANER ENERGY SOLUTIONS FOR THE FULTON INDUSTRIAL CID

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DEVELOPED AS PART OF THE

Fulton Industrial Clean Energy & Logistics Plan
Creating a blueprint for the infrastructure of tomorrow

DEVELOPED BY

FULTON INDUSTRIAL BOULEVARD IMPROVEMENT DISTRICT

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Expect More. Experience Better.

This toolkit is intended to provide a resource and serve as inspiration for businesses and organizations in Fulton Industrial Boulevard CID who are considering incorporating clean energy solutions into their operations. The reasons for incorporating clean energy may include environmental goals, financial goals, or others. Many businesses see value in generating electricity onsite to improve resiliency during power outages or to reduce their reliance and financial exposure to foreign energy supply chains. Other organizations simply want a way to reduce their electricity bills or the costs of maintaining a diesel fleet. The Georgia Legislature has numerous bipartisan efforts to increase the number of clean energy projects in the state for energy security, economic development, and environmental health improvement.

In this document, zero emission vehicles (ZEVs), solar energy, and battery storage are discussed. Note that these are pieces of a much larger clean energy puzzle from microgrids to sustainable aviation fuels to carbon capture technology, but are intended to provide a summary of the easiest entry points into a clean energy future. Other nontraditional technologies such as compressed natural gas (CNG) or propane vehicles can also play key roles in a business's energy portfolio, but in the interest of simplicity are not discussed.

Note that all information contained herein is intended to be for educational and informational purposes only. All information is subject to change and complete and thorough research is the responsibility of the reader.

Kimley-Horn collaborated with the Fulton Industrial Boulevard Community Improvement District (FICID) to develop this toolkit, combining FICID's local insights and vision for a greener future with Kimley-Horn's expertise in innovative planning and engineering solutions.

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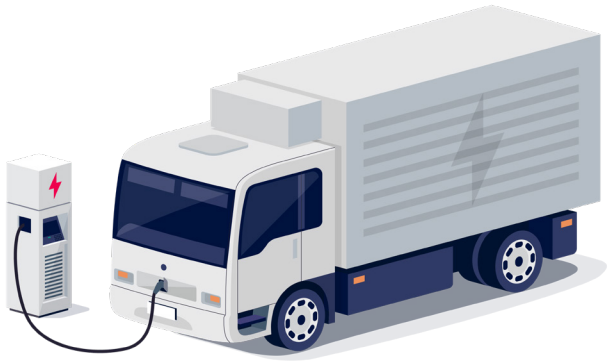
ZERO EMISSION VEHICLES (ZEVs)

Includes electric and hydrogen vehicles (cars, trucks, forklifts, bikes, etc.).



Pros of ZEVs:

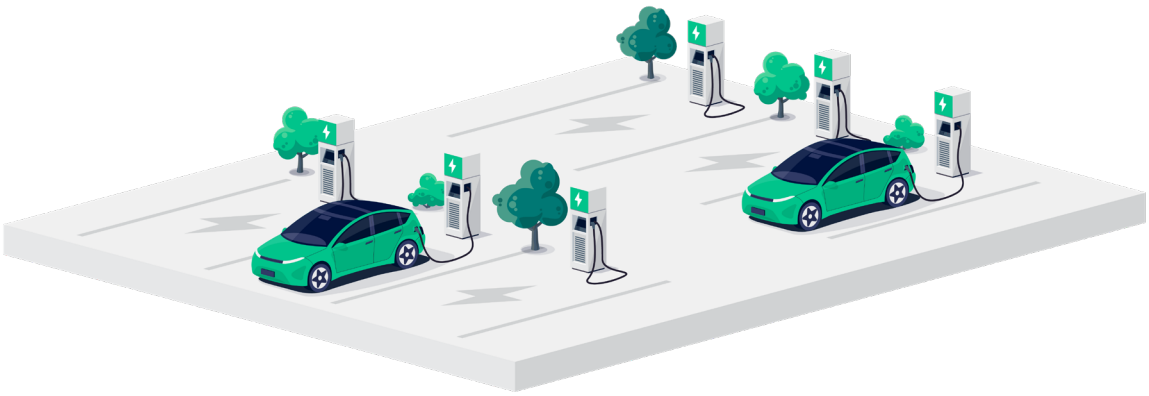
- **Lower Fuel Costs:** Electricity is less than half the cost of gasoline for the same distance.
- **Onsite Refueling:** Vehicles can refuel at parking spaces, reducing the need for separate refueling stops.
  - Bonus: Onsite generation (solar, batteries) allows refueling even during supply disruptions.
- **Stable Fuel Prices:** Electricity costs are regulated in Georgia, providing price stability.
- **Lower Maintenance:** No combustion means fewer breakdowns, no oil changes, and fewer drivetrain parts.
  - Note: Faster tire wear due to higher torque and acceleration, however regenerative braking also reduces brake wear.
- **Health & Safety:** Employees face less exposure to harmful chemicals, improving health outcomes and reducing downtime.

Cons of ZEVs:

Subject	Con	Mitigation
Initial Costs	Electric and hydrogen vehicles are more expensive than gas/diesel vehicles.	Costs are expected to decrease with advancements in battery tech and expanded supply chains.
Battery Range	EVs have limited range, better suited for local routes, with range affected by payload and weather.	Local, fixed routes are easier to convert now; long-haul solutions may come as battery tech improves.
Charging Infrastructure	Charging infrastructure is still in development and is limited for large-scale fleet use.	Businesses with onsite charging infrastructure have an advantage; NEVI plan continues expanding.
Charging Time	Charging times, even with fast chargers, can add delays to operations.	Slower charging is manageable for fleets parked overnight; fast charging tech is improving regularly.
Hydrogen Infrastructure	Hydrogen fueling stations are scarce, and most hydrogen is produced from fossil fuels.	Green hydrogen production is growing along with the number of Hydrogen fueling stations and could provide a more viable and eco-friendly option in the future.

ADDING ONSITE CHARGERS

Charger Level	Charging Speed	Power Supply	Best For
Level 1	3-6 miles per hour of charge; requires 10-15 hours for 50 miles	120V standard outlet; suitable for residential use	Residential vehicles parked for long periods (e.g., overnight)
Level 2	15-25 miles per hour of charge; requires 2-3 hours for 50 miles	240V power supply; plug or hardwired options, ideal for fleet vehicles with fixed routes	Fleet vehicles with extended parking times, fixed routes, or local use
Level 3 / DC Fast Chargers	Starts at 40kW and can deliver up to 1,000kW; 50 miles in less than 10 minutes	Requires 480V three-phase power; often needs a separate utility feed for larger installations	Public charging hubs, fleet charging, or heavy-duty freight vehicles



How many chargers can I install?

Using existing building power:

Step	Task	Details
1	Evaluate existing power supply	Level 3 chargers require 480V three-phase service. Without this, a utility service upgrade is needed.
2	Request peak demand info	Contact Georgia Power for 12-month peak demand (kW), then add 25% (multiply peak by 1.25) for conservatism.
3	Check transformer size	Transformer size (kVA, treated as kW) should be listed on the outdoor transformer or obtained from Georgia Power.
4	Check switchboard size	For three-phase 480V: Multiply amp rating by 0.7. For single-phase 240V: Multiply amp rating by 0.2.
5	Calculate available capacity	Subtract peak demand (adjusted by 1.25) from the smaller of the transformer kVA and switchboard kW. This number can be used in conjunction with typical energy use of Level 2 and Level 3 chargers to determine the site's capacity for charging infrastructure.

Example:

Below is a hypothetical project where a business, FIB Mechanical, wants to install four 125kW DC Fast Chargers on their existing building service to support their new EV fleet:

FIB Mechanical calls Georgia Power to request their 12-month peak demand value. The number they receive is 356kW. This number is multiplied by 1.25 to get 445kW of peak load.

FIB Mechanical also asks Georgia Power for their transformer size, and they are told it is 1500kVA, so it is assumed to be 1500kW.

The FIB Mechanical headquarters has a 480V, three-phase main switchboard with a rating of 2000A. Because this is a 480V, three-phase service, this number is multiplied by 0.7 to get 1400kW. Since this number is less than the transformer rating, 1400kW should be used to estimate the electrical capacity.

The estimated electrical capacity would be approximately 1400kW – 445kW or 955kW. The four, 125kW chargers only require 500kW total, so there is likely adequate capacity to support these chargers on the existing building service.

Note that other electrical upgrades such as panels or transformers may still be required to physically install the charging equipment.

Using a separate connection from the utility:

For larger charger installations, it is often more cost effective to have a separate EV-dedicated electrical supply from the utility. This may save infrastructure costs for the project or may increase the ability to secure grants or rebates for the project. Through discussions with Georgia Power, as of Summer 2025, a significant portion of the Fulton Industrial Boulevard CID has significant capacity to support large EV charging projects in the district. Note that this is not a guarantee of capacity for any site location, and capacity is subject to change over time. For any large EV charging installation, early coordination with Georgia Power will be paramount to project success.

EV CHARGER INCENTIVES

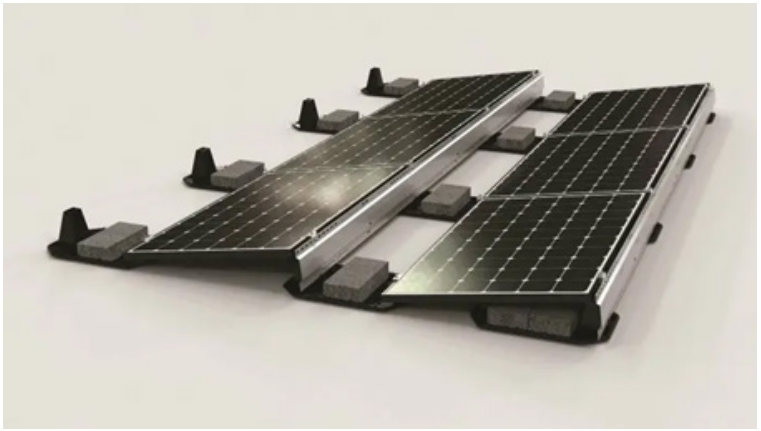
Incentive	Details
Georgia EV Charger Tax Credit	• 10% tax credit for businesses installing Level 2/3 chargers • Max credit: $2,500
Georgia Power Make Ready Program	• Covers costs for electrical infrastructure to chargers • Up to $300k for at least 6 Level 2 or 1 Level 3 charger • Funds can support public fleet vehicle infrastructure
Georgia Power Business Charging Rebate	• Tier 1: Up to 5 Level 2 chargers: $50/kW, max $2,000 • Tier 2: 6+ Level 2 chargers: $250/kW, max $20,000 • DC Fast Chargers: $100/kW, max $20,000 • Total: $40,000/year per business
Time of Use Charging Rates	• Reduced rates for off-peak charging • Assess facility's annual consumption for potential savings

Local Atlanta ZEV Partners

- Envirospark Energy

ROOFTOP SOLAR

Consideration	Details	Mitigation/Notes
Roof Type & Age	Roof type determines racking system used, affecting power density (watts/ sq ft).	Roofs should be in good condition and relatively new to avoid costly removals for repairs.
Roof Condition	Roof should be inspected to ensure it can support the system for the 20-year lifespan.	Consider structural analysis to confirm support, especially for older buildings.
Roof Warranty	Certain racking systems may void warranties.	Review warranty terms and choose racking systems that preserve coverage if needed.
Membrane Roofs	Suitable for ballasted racking systems, which use weights like cinder blocks to secure panels.	Perform structural analysis to ensure the building can support the weight of a ballasted system.
Ballasted Racking	Secure without piercing roof membrane, relying on weight alone.	If needed, mechanical attachments can be used to reduce weight or for increased security.
Structural Analysis	Essential to ensure the building structure can handle additional weight.	Mechanical attachments can be added if ballasted systems don't provide enough support.
Asphalt Shingle	Mechanically attached only due to higher roof slope, no ballast required.	Lack of ballast results in the least additional weight added to the structure.
Standing Seam / Corrugated	Mechanically attached only due to irregular surface.	Some attachment options do not require piercing the roof. Lack of ballast results in the least additional weight to the structure.



Membrane roof

Asphalt shingle mechanical attachment

Ballasted Roof mechanical attachment

Standing seam /
corrugated mechanical attachment

Corrugated / trapezoidal roof mechanical attachment

ESTIMATING YOUR POWER

Power Estimation Process

- System Size (DC to AC):
  - Calculate roof system size in DC kilowatts (kW).
  - Convert DC watts to kW by dividing by 1000.
  - Use a suggested ratio of 1.25 to estimate the AC system size by dividing the DC size by 1.25.
- Roof Setback Considerations:
  - Setbacks from roof edges, equipment, vents, and access points reduce available area for solar.
  - Shading from nearby structures or trees can further limit solar potential.
  - Structural capacity must be confirmed by a licensed structural engineer to ensure the roof can support the system weight.

Roof Type and Solar Density

- Membrane Roofs (Ballasted Systems):
  - Tilt and Row Spacing: The system's tilt affects row spacing; higher tilts require more space to avoid shading between rows.
  - Power Density: Systems on average produce 15 to 16.5 DC watts per square foot, depending on tilt and spacing.
- Flush Mount/Mechanically Attached Systems:
  - Roof Matching: These systems match the roof's tilt and minimize space between panels.
  - Power Density: Calculated by dividing the module wattage by its frame size.

Other Solar Installation Options

- Ground-Mount Solar:
  - Ideal for businesses with available land.
  - Requires approximately 6 acres to generate 1,000 kW of electricity.
  - Effective for offsetting high utility demands.
- Solar Canopies:
  - Suitable for parking lots or areas where roof and land space is limited.
  - Provides dual-use benefits like vehicle shading and lighting.
  - Typically more expensive per watt but justifiable for multi-functional purposes (e.g., EV charger integration).
- Solar Landscape Elements:
  - Solar can be integrated into landscaping with structures like solar picnic tables or solar 'flowers'.
  - These installations can provide power for small (phones, lighting) or large (EVs) devices depending on manufacturer choice while enhancing outdoor spaces.

Cobb County EMC solar flower

GEORGIA POWER PROGRAMS AND CONSTRAINTS

Program	Maximum Capacity	Key Features	Best Fit
Instantaneous Net Metering (RNR-11 Tariff)	Max 250 kW (AC)	• System size cannot exceed 125% of last year's peak demand for systems 100kW-250kW. • First come, first served (may close when capacity reaches 0.2% of peak demand). • Excess energy credited at avoided energy cost rate (4.4487¢/kWh) + Renewable generation adder (4¢/kWh).	Facilities with high solar usage that generate excess energy at times.
Energy Offset	Max capacity based on facility demand	• No credit for excess energy. • Ideal for systems where solar output is less than or equal to facility peak usage during peak solar hours.	Facilities with low solar capacity relative to usage or high demand during peak solar.
Customer Connected Solar Program	> 250 kW and > 125% peak demand	• Systems interconnect on the same Georgia Power Distribution circuit. • Georgia Power purchases 100% of energy produced. • Renewable Energy Credits (RECs) retired on your behalf.	Large facilities exceeding 250kW capacity and those not seeking to reduce system size.

Additional Considerations:

- **Instantaneous Net Metering** provides financial benefits from excess generation, making it suitable for facilities with variable energy use patterns.
- **Energy Offset** is straightforward, with no credits for overproduction, ideal for businesses that closely match their energy consumption with solar production.
- **Customer Connected Solar Program** is the best choice for larger installations that exceed capacity limits under other tariffs. All energy is sold back to Georgia Power, allowing businesses to benefit from fixed pricing over a term agreement.

HOW TO READ YOUR BILL FOR SOLAR PROGRAMS

For the RNR and Energy Offset programs, you will need to look at your bills to determine your maximum allowable system size.

Peak Demand:

- **Location on Bill:** On page two under “Current Electrical Service,” look for the line labeled “Pk kW.”
- **Usage:** The number under the “Usage” column shows the peak demand for the billing period (in kW).
- **Determining System Size:** The highest peak demand value in the last 12 months is used to calculate the 125% limitation for the Instantaneous Net Metering and Energy Offset programs.
- **12-Month Peak Demand:** You can request this value from Georgia Power if needed.

Energy Usage:

- **Location on Bill:** The first number in the “Usage” column represents the billing period’s energy usage in kWh.
- **Understanding Credits/Costs:** Comparing your facility’s annual energy usage to the estimated output of your PV system helps predict credits earned (if applicable) or energy costs avoided. However, the exact benefits will vary based on the timing of your facility’s energy use, particularly during solar generation hours.

Key Takeaways:

- To optimize system size and understand the financial impact, regularly review peak demand and energy usage data from your bills.
- For accurate system sizing and energy usage evaluation, consider both peak demand and consumption during solar hours.

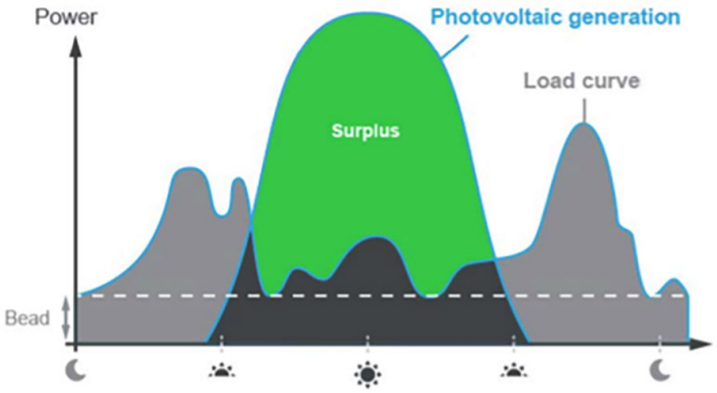


Figure 6. PV Generation exceeding building load at mid-day(11)

BUSINESS MODELS

Ownership Type	Initial Cost	Maintenance Responsibility	Regular Payments	Buyout Option	Long-Term Agreement
Self-owned, operated, maintained	✓	✓			
Self-owned & operated, Third party maintained	✓		✓		
Third party owned and operated – Agreement with Property Owner			✓	✓	✓
Third party owned and operated – Agreement with Utility			✓		✓

BATTERY ENERGY STORAGE SYSTEMS (BESS) OVERVIEW

- Purpose of BESS:
  - Store excess solar energy for later use onsite.
  - Provide a backup power supply during outages.
  - Perform “peak shaving” to reduce electricity costs by lowering the peak demand from the utility.
- Key Considerations:
  - Battery storage is essential for achieving full energy resiliency from behind-the-meter solar installations.
  - The financial benefits and specific applications of BESS vary widely depending on business needs and utility rate structures.
- Recommendation:
  - Consult with a renewable energy vendor to assess whether battery storage is a suitable investment for your facility’s energy requirements.

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LOCAL ATLANTA SOLAR PARTNERS

Note the below list is not intended to be comprehensive or to represent an endorsement of the below companies.

- Cherry Street Energy – Rooftop Solar Installer/Owner/Operator
- Radiance Solar – Solar Installer
- Nexamp – Solar Installer/Owner/Operator
- Quest Renewables – Solar Canopy Vendor
- Infinite Energy Advisors – Residential Solar Installer
- Velo Solar – Solar Installer
- Inman Solar – Solar Installer