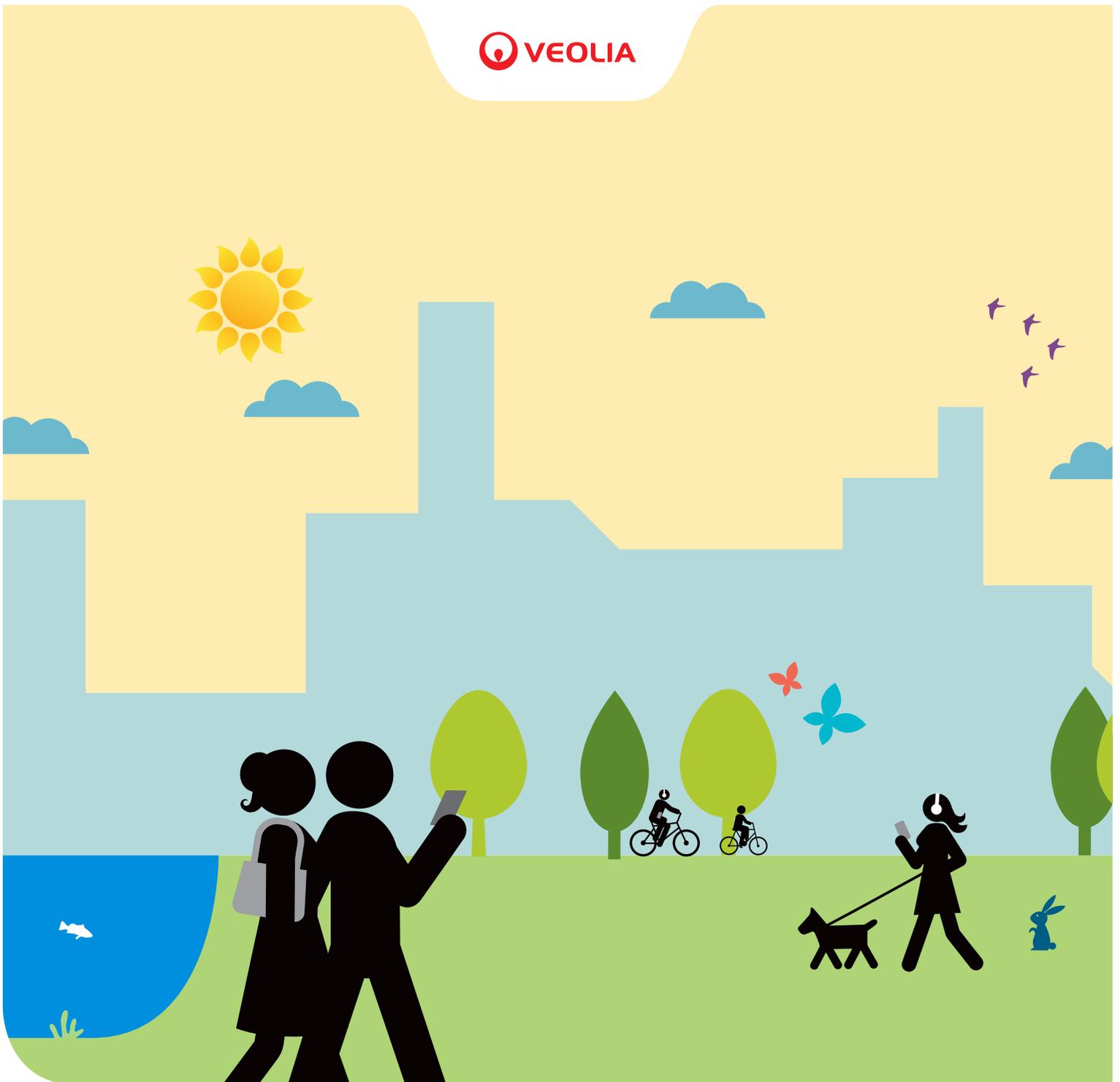


Trenton Resilient Microgrid





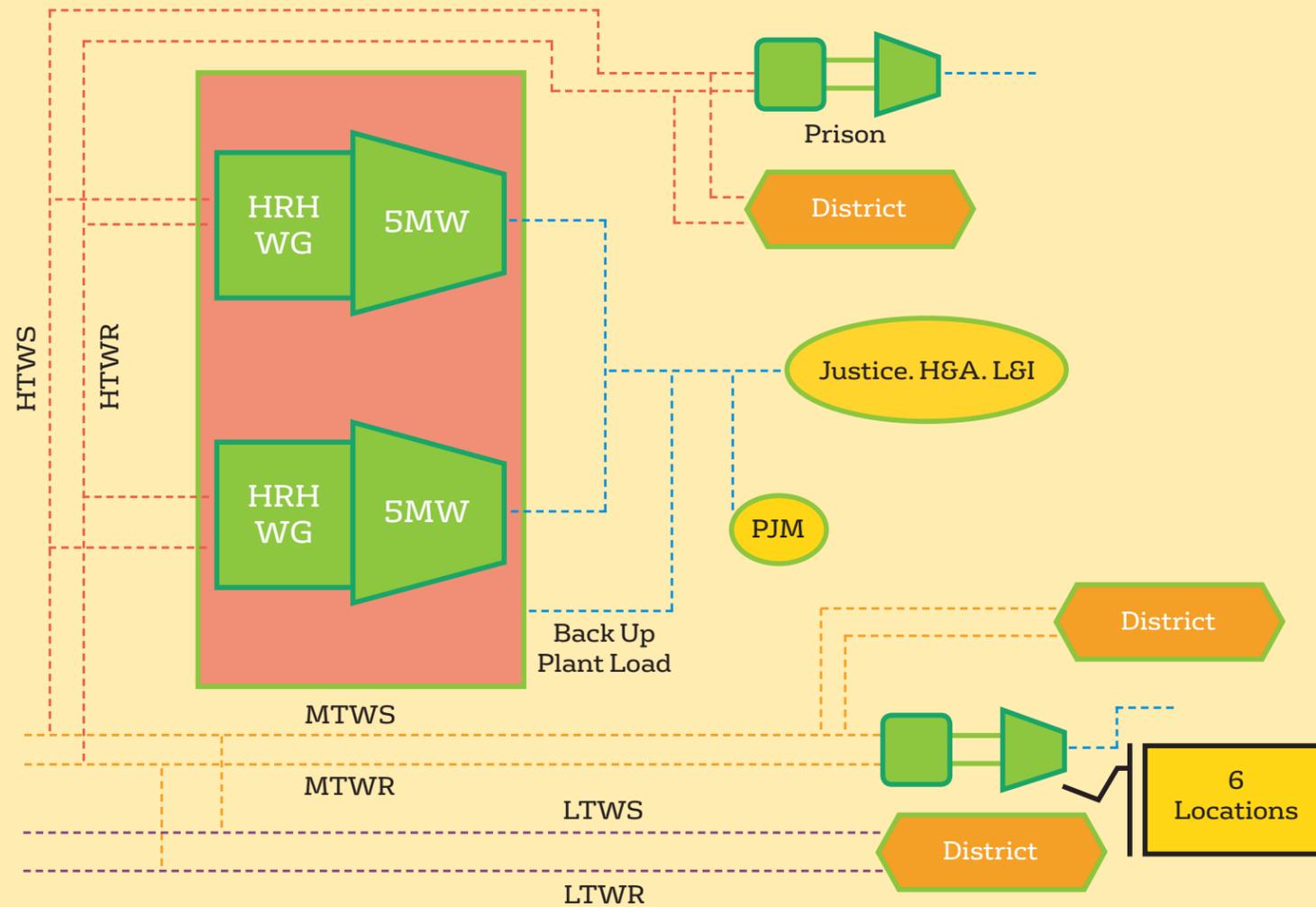
Veolia Trenton

Located beneath the streets and bridges of Trenton is a network of district energy hot-water and chilled-water pipes delivering environmentally friendly thermal energy to some of New Jersey's most critical buildings. Combining our underground network with the latest energy efficient technology, enables Veolia to help reduce the region's greenhouse gas emissions and minimize environmental impact. Our district energy networks serve the critical heating and cooling needs of 30 buildings in Trenton.

Veolia by the numbers

- **30** – Buildings served by Veolia's Trenton network
- **12M sq ft** area of buildings in Trenton receiving heating and cooling energy from Veolia
- **Critical customers** include the Governor's Office, State Justice Complex, City Hall, SunBank Arena and Trenton State Prison
- **11,000 ton-hours** of chilled water storage to reduce on peak energy use and emissions
- **14,000 tons** of cooling
- **160 MMBTUh** of heating
- **12 miles** of chilled water and hot water piping throughout the City of Trenton

TRENTON, NEW JERSEY



Schematic of one potential resilient microgrid design – Trenton

Microgrid Benefits

The establishment of the micro grid would add significant benefits for the city of Trenton, the state of New Jersey, and the various stakeholders included in the microgrid. The benefits include:

- Reliability and resiliency for critical facilities
- Lower carbon emissions and overall footprint
- Efficient energy supply



Proposed Trenton Town Center Microgrid

Trenton, like many communities, is vulnerable to grid-wide outages caused by extreme weather events and other emergencies. As the seat of government for New Jersey, downtown Trenton is home to critical facilities and infrastructure that provide essential services during an emergency. These facilities require reliable electrical and thermal utilities to avoid the loss of critical government functions and to respond adequately to a natural or man-made disaster.

A microgrid presents a unique opportunity to:

- **Provide facilities 100% of the power** needed to serve as assembly areas or emergency shelters and keep critical services functioning
- **Secure critical** electronic financial, legal, and industrial data and records
- **Create efficiencies and reduce energy costs** for city, county and state government by placing power-generating resources closer to end users
- **Serve as a source** of clean power, helping reducing greenhouse gas emissions
- **Spur economic development** and create jobs in and around Trenton
- **Allow the State to focus on its core business** of providing services to residents while Veolia delivers on our core business of utility infrastructure and resiliency

Proposed Grid

The project will involve expanding the capacities of an existing thermal grid that is owned and operated by Veolia. The expansion will include the integration of distributed energy resources in Trenton municipal buildings. Energy Efficiency Measures (EEMs) will also be used to minimize the demand of grid connected facilities.

The microgrid will combine traditional power systems with remote steam turbines, natural gas powered micro turbines and/or reciprocating engines in a highly efficient combined heat and power (CHP) arrangement. Solar photovoltaic (PV) arrays will also be used during normal operating conditions and provide microgrid members the opportunity to use renewable energy to supply a portion of their load. Recovered thermal energy from the CHP plant will be distributed to end users through Veolia's existing district energy system, providing efficient energy.

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