Grid-Independent Charging/Fueling Stations

Grimes Carbon Tech (GCT)

A net negative green technology company changing the world

September 2024

CAPER (Caustic, Aqueous-Phase, Electrochemical Reforming)

Distributed CAPER systems using low-grade waste heat to produce hydrogen on-site & on-demand with a zero or negative carbon footprint

CCR (Carbon Capture & Reuse Technology)

CCR technology that converts CO2 into Sustainable Aviation Fuel (SAF) at the cost of conventional, fossil-derived, Jet A fuel

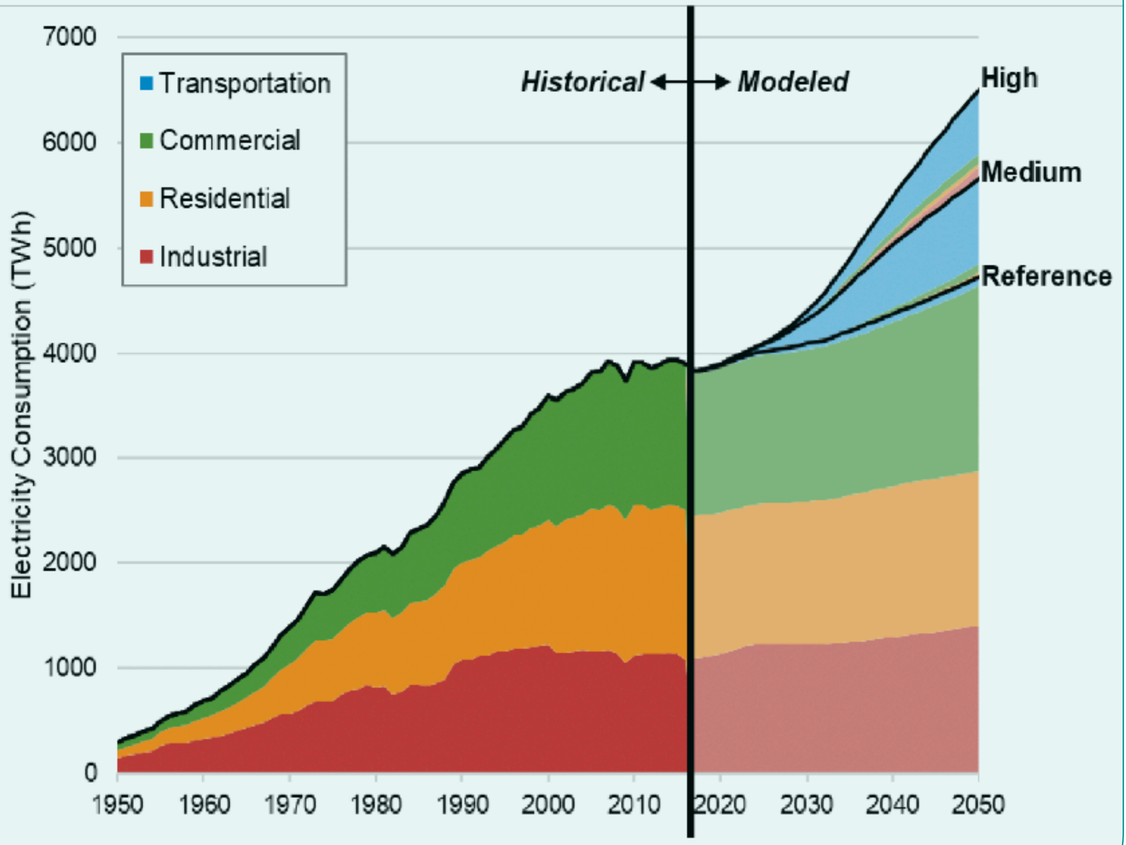
Grids worldwide are operating at close to full capacity

Electric vehicles are competitive but restricted by infrastructure

EVs expected to be the largest source of demand growth

- Current EV projections will require a 30% increase in total worldwide grid capacity.
- The US DOE predicts that charging EVs will increase electricity consumption by 25-30% over the next two decades.
- On average each light-duty EV adds 2-3 kW load to the grid, comparable to 2-3 apartments.
- A Tesla supercharger or a truck or bus charger adds the equivalent of 500 apartments.
- Grid capacity and availability is a limiting factor on the widespread adoption of EVs.
- The current grid is not green.

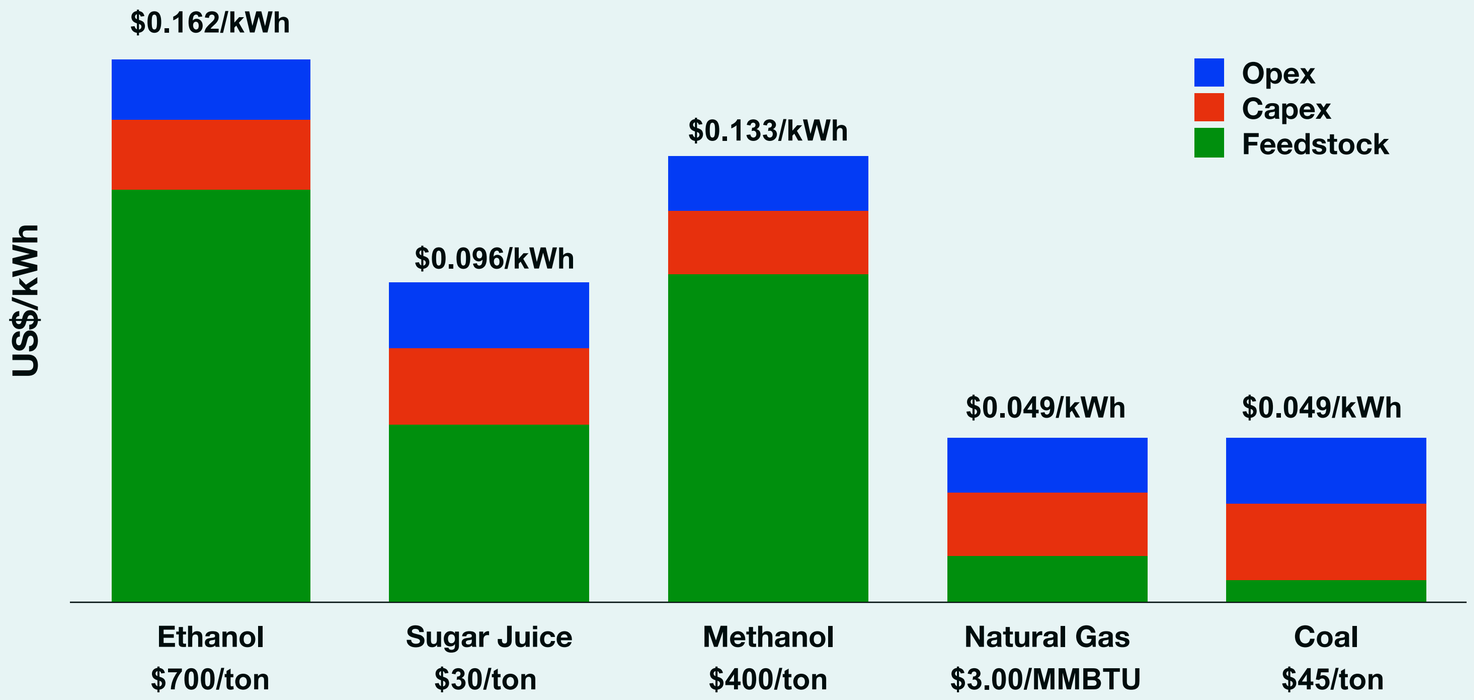
EV Impact on Electricity Demand



Sources: NREL

GCT has the *only* method of making green electricity from multiple feedstocks

Makes onsite, on-demand hydrogen for fuel cells or vehicles



Assumptions:

- **~$100,000/ton H2/day Capex**
- **100% debt over 10 years @ 7%/year**
- **55% efficient fuel cells**

GCT CAPER Process:

- Can use sugar juice directly & all waste by converting it to methanol & then Green H2 & electricity .
- Can operate on low-cost, raw ethanol.
- Long-term feedstock contracts offer price stability.
- Create blue electricity from natural gas or coal. When coupled with the CCR, this fossil carbon can be recycled as cost-competitive syngas or liquid fuels
- Onsite, modular systems can be added as needed & offers unparalleled system reliability.
- GCT,s hydrogen costs will make fuel cell vehicles economically viable without the need for subsidy.

CAPER increases overall system efficiency using multiple benign fuels

Electrical efficiency can increase as much as 50% over conventional grid connections

GCT CCP ~$2,500/kW

Inputs

Ethanol or Methanol

Syrup

Carbon Slurry

CNG, LNG or Pipeline Natural Gas

Modular, flexible and distributed

GCT's CAPER converts coal slurry in modular, factory-built shipping containers that eliminate the need for H2 pipelines. The CAPER can be operated alone or integrated with a CCR system to produce fuels

Prefabricated Modules

Low energy, liquid-phase

GCT's CAPER operates on waste heat (< 200^{0}C) and in liquid-phase, eliminating the need for gas-phase compression, a major cost. The system only produces H2, eliminating the need for gas separation as well.

Outputs

electricit
y

Distributed

Centralized

For more information please email info@grimescarbontech.com

Factory-built, modular systems allow fast deployment where needed

Grid independence speeds up deployment & reduces cost

4 MW System