

GCT Data Center/Nuclear Comparison

Grimes Carbon Tech (GCT)

A net negative green technology company changing the world

September 2024



CCP (Combined Cooling and Power)

Distributed CAPER systems using low-grade waste heat to produce hydrogen on-site, integrated with thermally driven cooling & integrated heat recovery from the servers offers a 50% reduction in overall energy consumption.

Three Mile Island is an 835 MW recommission costing \$1.6 Billion

A new nuclear plant of the same size would cost \$5.0 Billion

Three Mile Island



835 MW Unit 1 to be recommissioned for \$1.6 B

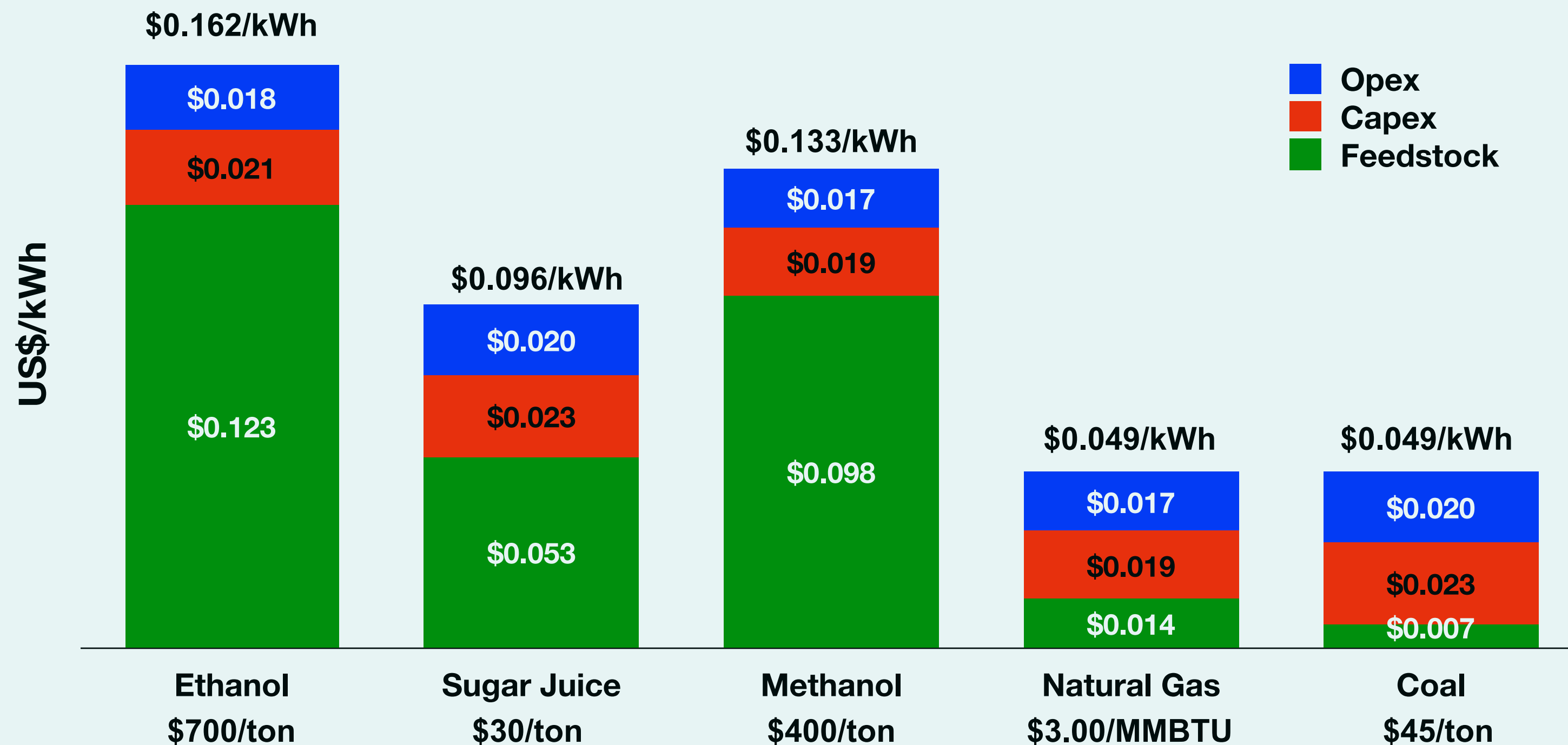
Data Centers are desperate for power

- A single ChatGPT query requires 2.9 watt-hours of electricity versus 0.3 watt-hours for a google search.
- By 2030 data centers will consume 8% of US power versus 3% in 2022.
- US utilities will need to invest \$50B in new capacity for data centers alone by 2030.
- Recommissioning TMI would cost less than a third as much as a new plant.
- Capex would be \$0.035/kWh from TMI as opposed to \$.111/kWh for new construction (10 years @ 7.5%).
- DOE estimates for Opex from nuclear plants are \$0.018/kWh.
- Average T&D costs nationwide are \$0.070/kWh
- Total delivered cost for electricity from TMI would be \$0.123/kWh versus \$0.199/kWh for a new plant

GCT has a proprietary method of reducing electricity demand by 50%

Integration of power generation & heat recovery offers unprecedented efficiency

Comparison of Electricity Cost (\$/kWh) vs Feedstock



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.
- Can operate on low-cost, raw ethanol.
- Long-term feedstock contracts offer price stability
- Create blue hydrogen 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
- The 50% reduction in energy needed by the CCP system reduces the load for 13,360 racks of 25 kW AI servers from 835MW to 417.4MW

CAPEX creates on-site Green & Blue Electricity from multiple feedstocks

Electrical efficiency can increase as much as 50% over conventional plants

Nuclear Plants



\$1.6 B Capex

Three Mile Island



\$5.0 B Capex

New Construction

Expensive, Long-Distance Transmission Grid



Grid Connected Center



Mega Center
(13,360-25kW AI Racks)

GCT



Ethanol or Methanol



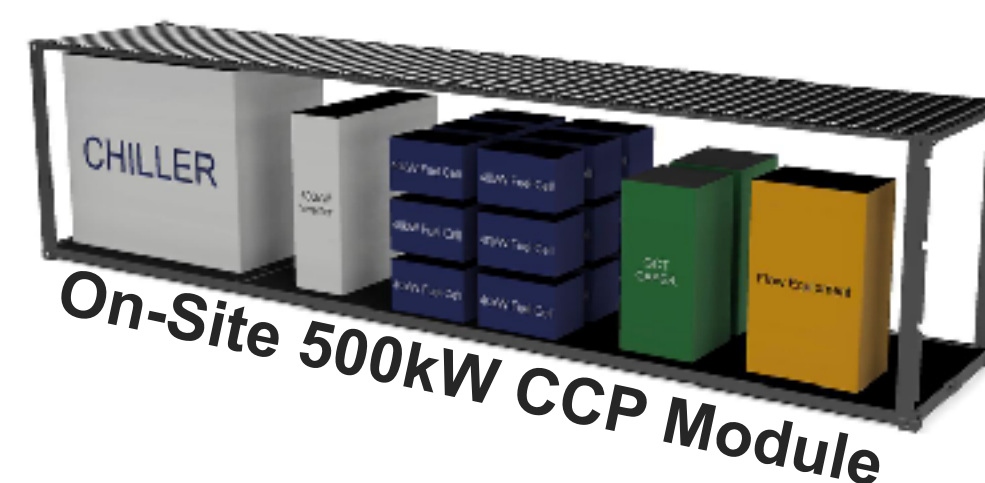
Syrup



Carbon Slurry



Natural Gas



Logistic-Compatible Fuels

Delivered Costs for Fuels:

- Methanol \$400/ton
- Ethanol \$700/ton
- Syrup \$30/ton juice
- Natural Gas \$3.00/MMBTU
- Coal (II#6) \$45/ton

GCT On-Site CCP - 417.5 MW



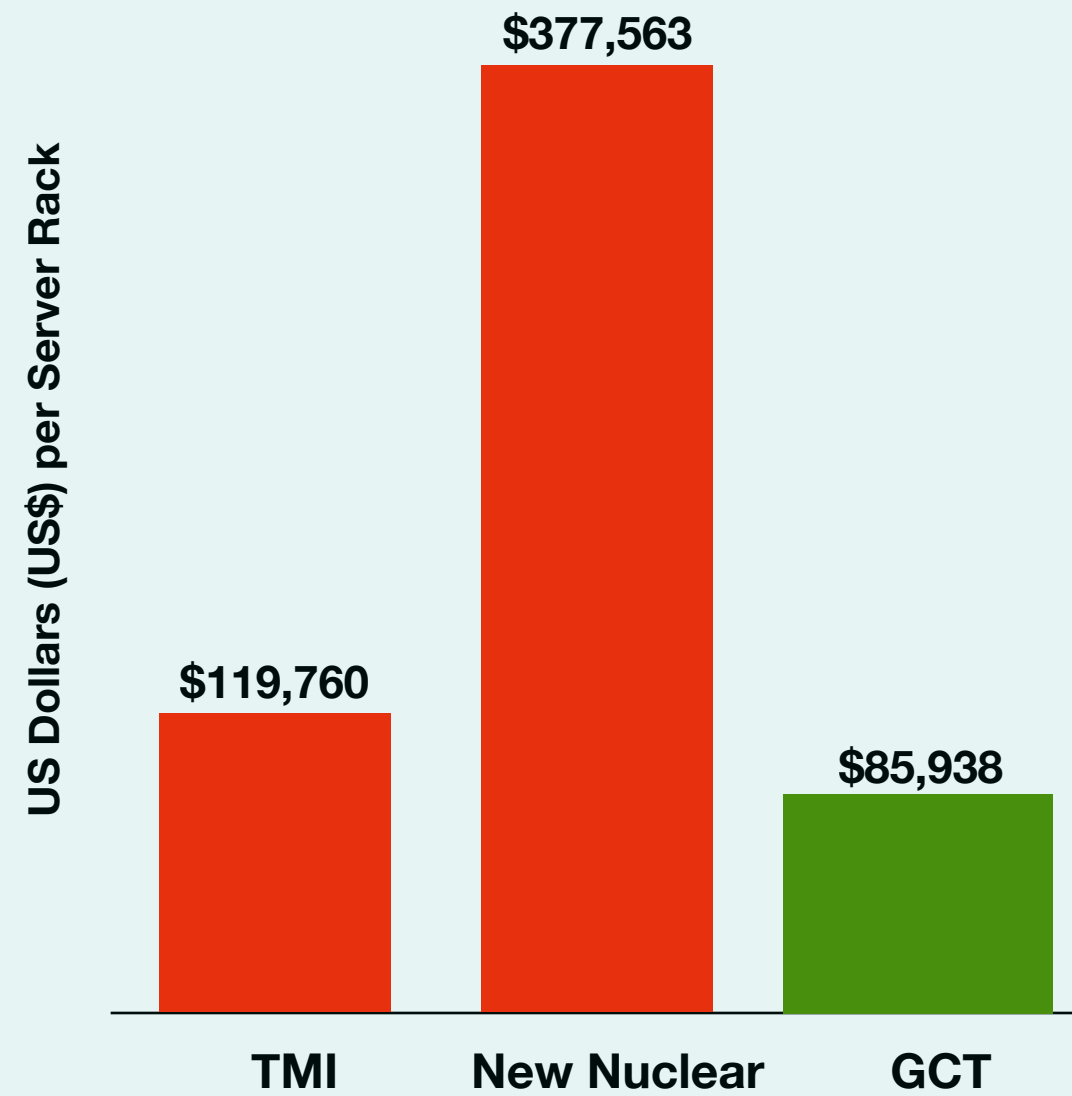
40-360 Modules
(14,400-25kW AI Racks)

\$1.0 B Capex

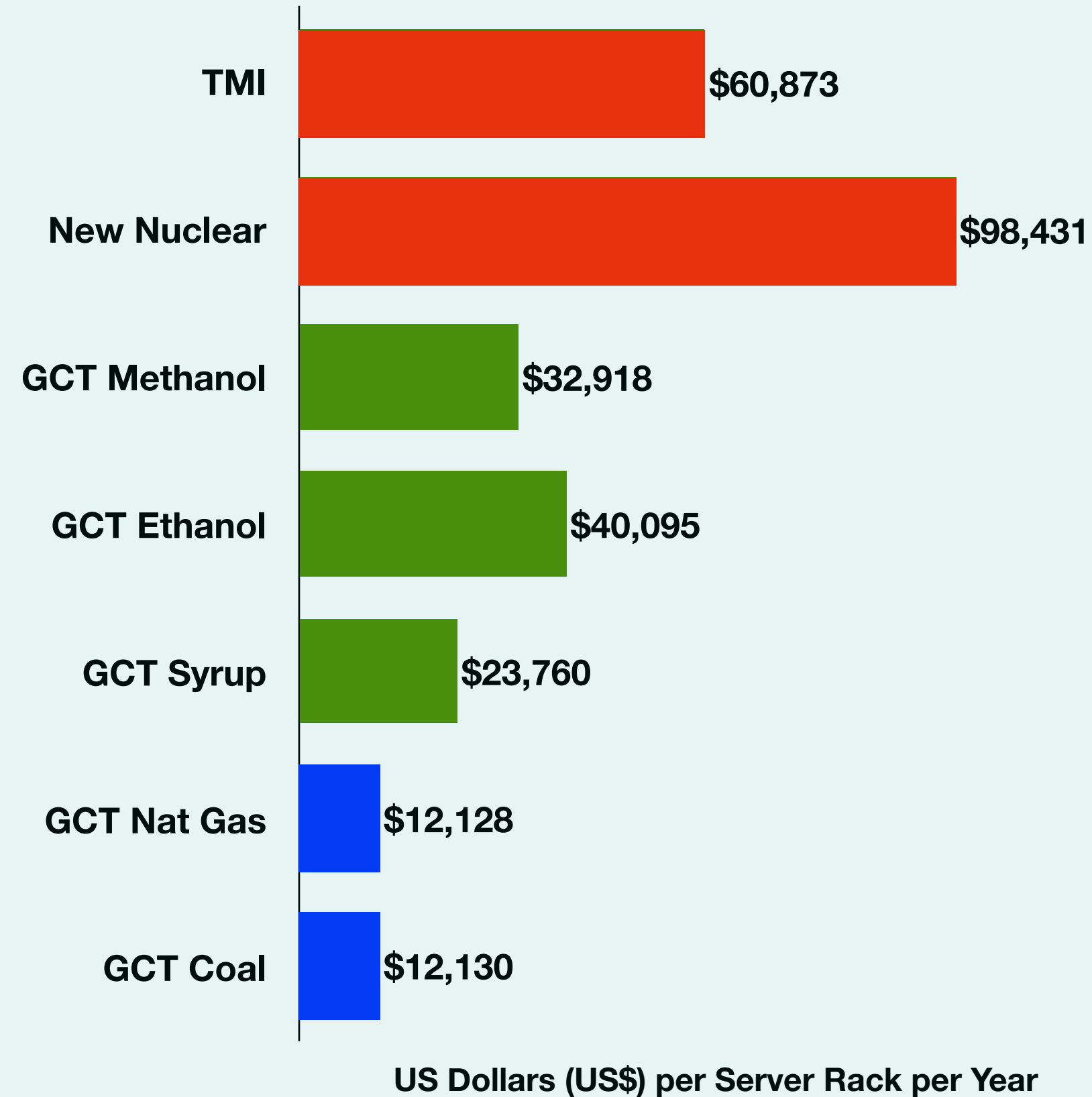
CCP System offers Reduced Capital Investment & Commissioning Time

Green energy costs can be up to 60% lower than TMI

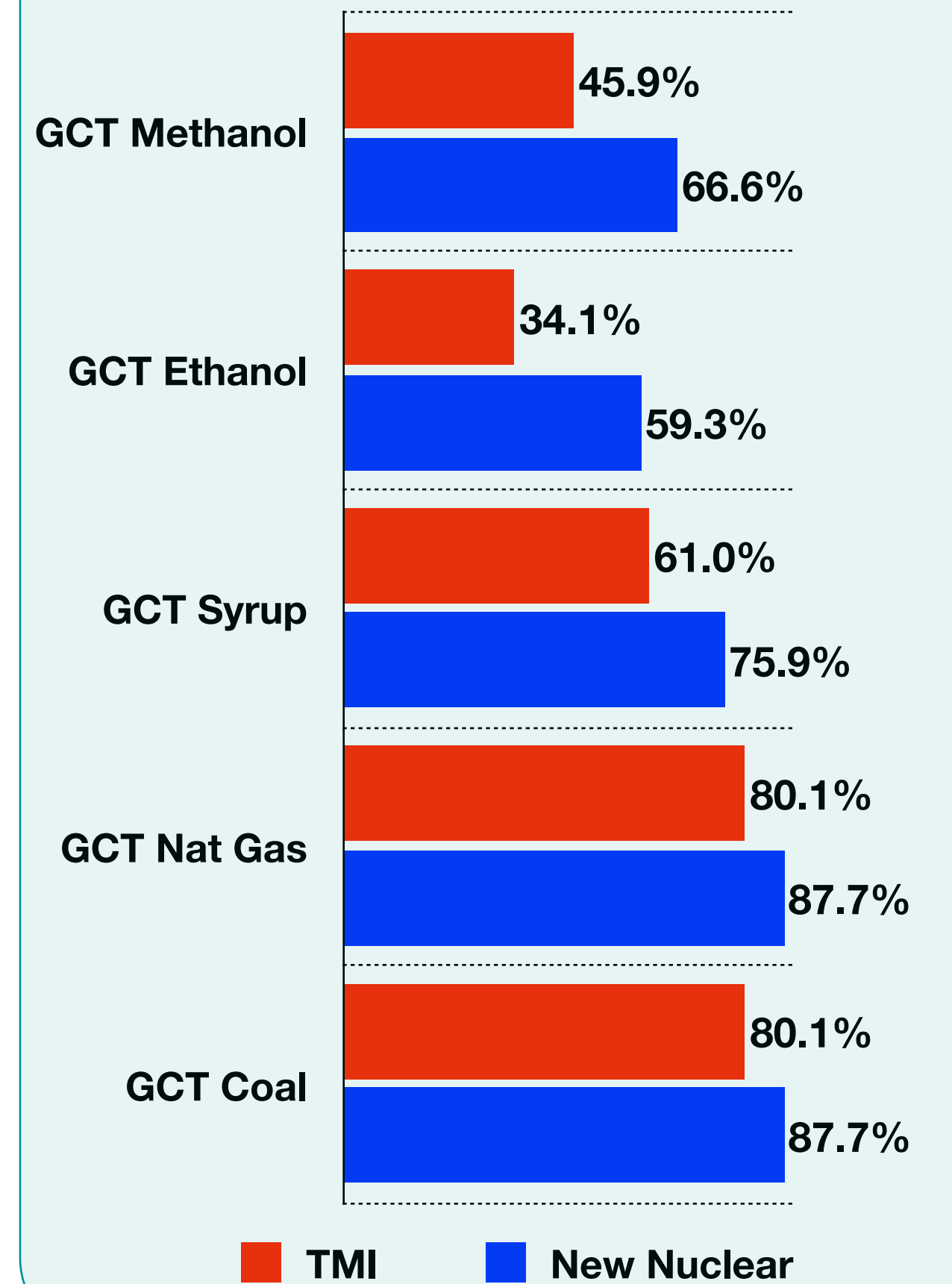
CAPEX per Server Rack



Electricity Cost per Server Rack per Year



Energy Cost Reduction



Delivered Costs for Fuels:

- Methanol \$400/ton
- Ethanol \$700/ton
- Syrup \$30/ton juice
- Natural Gas \$3.00/MMBTU
- Coal (Ill#6) \$45/ton

Factory-built, modular systems allow fast deployment where needed

Multiple units offer unparalleled system reliability (360 Rack Module)

360 Rack Module Area:

780.16 m² (8,400 ft²)
0.08 hectares (0.19 acres)

Electric Capacity = 12 MW

methanol 12.5 days between refueling
ethanol 17.4 days between refueling
syrup 8.9 days between refueling

