NET POWER

TRULY CLEAN, CHEAPER ENERGY
NETPower 50 MW Reference Plant

- NETPower was invented by the 8 Rivers team in 2010.
- Zero emissions power from natural gas at lower cost than a combined cycle plant.
  - >97% Carbon Capture and no NOX, SOX, or particulate pollutants.
  - 45Q tax credits in The US add ~$300M NPV per 300 MW
- Complements renewables with clean back-up power and energy storage capability
- NETPower has raised >$150M from 8 Rivers, McDermott, Exelon, and Occidental Petroleum.
- Combustor demonstrated in Q2 2018, multiple commercial projects in development.
WORLD CLASS PARTNERS

NET POWER IS SUPPORTED BY STRONG PARTNERS WITH DEMONSTRATED EXPERTISE TO DRIVE COMMERCIALIZATION

8 RIVERs
- Inventor/developer
- Engineering/sales/marketing

TOSHIbA
- Key OEM partner (2011)
- Turbine design, testing and supply
- Market Cap: $8B. Employees: 168,000

Exelon
- Investor (2012)
- EPC and sales expertise
- Market Cap: $49B. Employees: 34,000

MCDERMOTT
- Investor (2014)
- Operations and owner input
- Market Cap: $1.4B. Employees: 40,000

OXY Low Carbon Ventures, LLC
- Investor (2018)
- CO₂ and commissioning expertise
- Market Cap: $37B. Employees: 11,000

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THE ALLAM CYCLE RUNS ON SUPERCritical CO2

<table>
<thead>
<tr>
<th>300 MW Allam Cycle</th>
<th>Efficiency (LHV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turbine Shaft Power</td>
<td>82.5%</td>
</tr>
<tr>
<td>CO₂ compressor and generator</td>
<td>-8%</td>
</tr>
<tr>
<td>ASU auxiliary load</td>
<td>-12%</td>
</tr>
<tr>
<td>Balance of Plant</td>
<td>-7%</td>
</tr>
<tr>
<td><strong>Net Efficiency</strong></td>
<td><strong>55.1%</strong></td>
</tr>
</tbody>
</table>

* 58.9% efficiency is achievable at higher capital cost.
NET POWER PLANTS ARE EXTREMELY COMPETITIVE

45Q AND INDUSTRIAL GAS SALES PROVIDE NETPOWER WITH A COST ADVANTAGE TODAY.

AT MATURE COSTS, NETPOWER PLANTS ARE ABLE TO COMPETE ON ELECTRICITY ALONE.

$55/ton CO₂. 45Q Tax Credit converted to a pre-tax $/short ton basis to illustrate impact.

Notes: Assumes $2.85/MMBTU natural gas in 2018, with annual escalation at 2%. All data for utility-scale projects. Capacity payments and other ancillary service revenue not included. 92% Capacity Factor.
50MW TH PLANT IN LA PORTE TEXAS

2016
Consortium Start (Mar)

2017
Construction Complete (Dec)

2018
Commissioning Complete (Apr)
Combustor First Fire (May)
Combustor Test Complete (Aug)

2019
Turbine Test Path (Underway)
COMMERCIAL PROJECTS IN PROGRESS

MULTIPLE 303 MW SCALE PROJECTS UNDER CONSIDERATION

COMPLETED DETAILED PRE-FEED FOR A 303 MWe PLANT

SCALING FROM 50 MWth PLANT:

- COMBUSTOR: NO SCALE-UP, TESTING FULL-SCALE
- TURBINE SHELL: 2.5X SCALE-UP
- BALANCE OF PLANT: COMPONENTS COMMERCIALY AVAILABLE AT SCALE

<table>
<thead>
<tr>
<th>Plant outputs</th>
<th>Commercial Plant Performance*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric Output</td>
<td>303MW</td>
</tr>
<tr>
<td>CO₂ Output</td>
<td>963,000 ton/year</td>
</tr>
<tr>
<td>N₂ Output</td>
<td>4.2 MM ton/year</td>
</tr>
<tr>
<td>Ar Output</td>
<td>70,000 ton/year</td>
</tr>
<tr>
<td>ASU O₂</td>
<td>4,200 ton/day</td>
</tr>
<tr>
<td>Site Area</td>
<td>13 acres</td>
</tr>
<tr>
<td>Thermal Heat Input (MW)</td>
<td>549.1 100%</td>
</tr>
<tr>
<td>Turbine Shaft Power (MW)</td>
<td>453.0 -18%</td>
</tr>
<tr>
<td>Shaft-mounted CO₂ compressor and generator</td>
<td>-47.9 -8%</td>
</tr>
<tr>
<td>Gross Electrical Output (MW)</td>
<td>405.1</td>
</tr>
<tr>
<td>ASU auxiliary load</td>
<td>-65.1 -12%</td>
</tr>
<tr>
<td>BOP parasitics (pumps, cooling tower, etc.)</td>
<td>-37.5 -7%</td>
</tr>
<tr>
<td>Net Electrical Output (MW)</td>
<td>302.5 55.1%</td>
</tr>
<tr>
<td>Net Plant Efficiency (% on LHV)*</td>
<td>55.1% 55.1%</td>
</tr>
<tr>
<td>Net Plant Heat Rate (LHV)*</td>
<td>6.193 6.193</td>
</tr>
</tbody>
</table>

* Efficiency optimized for US economics. For countries with high gas prices, 58.9% efficiency is achievable at higher capital cost.
CO$_2$ CAN BE SEQUESTERED

Enhanced Oil Recovery (EOR) uses CO$_2$ for the production of oil, while being net carbon neutral (~1 carbon atom sequestered for every carbon atom in oil)

CO$_2$ can also be sequestered in deep saline formations

In the US, 45Q provides federal tax credit of $50/tonne for sequestration and $35 for EOR
NET POWER IS ABOUT MORE THAN POWER

VALUE OF INDUSTRIAL GAS STREAM APPROACHES VALUE OF ELECTRICITY

45Q TAX CREDITS FOR CO₂ CAPTURE PROVIDE $35-50/TON FOR NET POWER’S CO₂.
NET POWER’S ALLAM CYCLE DELIVERS

ELECTRICITY FROM NATURAL GAS FOR LESS THAN A COMBINED CYCLE PLANT

ENVIRONMENTAL BENEFITS

- **No NOx or SOx emissions.**
- **Captures or eliminates** substantially all of the carbon and non-carbon atmospheric emissions **without additional cost**
- **Does not require water** (at a small reduction in efficiency)

ADDITIONAL CASH FLOW VALUE STREAMS

- **Captured CO\textsubscript{2}**
- **In the US, 45Q tax credits**
  - Per 300MW turbine ~$430M total/~$300M PV
- **Industrial gases such as N\textsubscript{2} and Ar**

ECONOMICS

- **Demonstrates superior total economic advantage** to existing natural gas power plants
- **Can use inexpensive fuels** such as acid gas, sour gas, associated gas, and produced gas
- **Produces valuable gases**, including CO\textsubscript{2}, N\textsubscript{2}, O\textsubscript{2} and Ar
- **Can provide CO\textsubscript{2} for EOR and Sour Gas clean-up**
ALLAM CYCLE
NATURAL GAS PLATFORM

OXY-FUEL, SEMI-CLOSED-LOOP, WITH A CO₂ WORKING FLUID.

55 TO 59% (LHV) NET EFFICIENCY (CAN BE ADJUSTED), WITH CAPTURE OF >97% OF CO₂.

CO₂ AND WATER ARE THE ONLY EFFLUENTS. ASU ALSO PRODUCES SALEABLE BYPRODUCTS.

A NEAR-TERM CO₂ SOLUTION THAT UTILIZES MOSTLY EXISTING EQUIPMENT IN A NOVEL WAY.
THE ALLAM CYCLE IS A DIFFERENT KIND OF Brayton CYCLE

Turbines are drive by “mass” and “heat”

The Allam Cycle increases mass by replacing the N₂ in the air with a much greater mass of CO₂

The Allam Cycle recuperates exhaust heat to warm the CO₂ to high temperatures

The sharply increased efficiencies are used to offset the parasitic loads of air separation and recompression

*Width of lines proportional to mass.*
THE DEMAND FOR CO₂ IS SUBSTANTIAL

Demand for CO₂ from NET Power plants outstrips IEA projections for new and replacement power plants.

<table>
<thead>
<tr>
<th>Region</th>
<th>Power Demand to 2040 (IEA) (total units 4,108) (3.5 billion tpy CO₂)</th>
<th>EOR Demand (Kuuskraa) (total unit 6,018) (4.9 billion tpy CO₂)</th>
<th>ECBMR Demand (Godec, Dipietro) (total units 21,601) (17.7 billion tpy CO₂)</th>
<th>Cement (USGS 2012) (total units 1415) (1.2 billion tpy CO₂)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>158</td>
<td>1289</td>
<td>11292</td>
<td>1294</td>
</tr>
<tr>
<td>US</td>
<td>450</td>
<td>761</td>
<td>2908</td>
<td>447</td>
</tr>
<tr>
<td>Europe</td>
<td>394</td>
<td>1856</td>
<td>3105</td>
<td>417</td>
</tr>
<tr>
<td>Asia</td>
<td>452</td>
<td>452</td>
<td>1039</td>
<td>104</td>
</tr>
<tr>
<td>Russia</td>
<td>302</td>
<td>208</td>
<td>222</td>
<td>50</td>
</tr>
<tr>
<td>Middle East</td>
<td>314</td>
<td>957</td>
<td>108</td>
<td>27</td>
</tr>
<tr>
<td>Africa</td>
<td></td>
<td>262</td>
<td>104</td>
<td>23</td>
</tr>
<tr>
<td>South America</td>
<td></td>
<td>182</td>
<td>128</td>
<td>58</td>
</tr>
</tbody>
</table>

Number of NET Power 300 MW plants needed by region to fulfill new and replacement fossil builds.

Number of NET Power 300 MW plants needed to meet current CO₂ demand for EOR, ECBMR, and cement.
THE NET POWER ADVANTAGE - THE ALLAM CYCLE

This diagram has “pressure” logarithmically spaced up and down.

And “enthalpy” is evenly spaced from left to right. Enthalpy is a measure of energy. As you move from left to right, you are injecting energy into the system, and vice versa.

Temperature is on the up-down blue lines. To the right, they and enthalpy move together.

The “dome” is an important landmark. Above the top, CO₂ is “supercritical”. Below the top and to the right, CO₂ is a gas, and to the left, CO₂ is a liquid. Inside, it is a mixture of gas and liquid.

One more thing. The purple lines are “entropy” lines. Think of these as railroad tracks for going up and down in pressure. In the turbine, the tracks go from upper right and down and to the left. The left-right distance in enthalpy is the amount of power the turbine produces.

Note that on the left, these railroad tracks are steeper, and those for the pump are steeper than those for the compressor. That means it takes less energy (left-right) to pump than to compress.

One last thing. The system design point is where the turbine dumps into the heat exchanger. Ask yourself “why?”

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45Q TAX CREDIT FOR CO₂ CAPTURE AND STORAGE

Eligible facilities can claim credits for up to 12 years.

January 1, 2024 deadline to commence construction.

If CO₂ is used for EOR, must capture at least 500,000 tonnes/year.

Credits assigned to the facility operator, may be transferred to the CO₂ storage entity.

Tax legislation (45Q) passed in the U.S. in Feb ’18, placing significant value on captured and sequestered CO₂.

Tax credit value is $428M (pre-tax real value basis) for a 2022 COD project with EOR.

<table>
<thead>
<tr>
<th>Year</th>
<th>EOR or Chemical Conversion</th>
<th>Sequestration</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>$24/mt</td>
<td>$36/mt</td>
</tr>
<tr>
<td>2026</td>
<td>$35/mt</td>
<td>$50/mt</td>
</tr>
</tbody>
</table>

45Q After-Tax vs. Pre-Tax

- After-Tax Credit (2026 value)
- Pre-Tax (21% tax rate)
- Pre-Tax (35% tax rate)
NET POWER COMPLEMENTS RENEWABLES

DEEP DECARBONIZATION, WITHOUT DIMINISHING RETURNS.

SOLAR AND WIND’S RELIANCE ON NATURAL GAS BACK-UP CEASES TO BE A CO₂ PROBLEM WITH NET POWER

Turns out wind and solar have a secret friend: Natural gas

By Chris Mooney

- **Net Power Removes solar and wind’s reliance on Combined Cycle**
- It provides peaking, back-up, and ramping, with zero CO₂.
- **Our ramp rate is higher than CCGT and comparable to CT**
- Each plant can create >150 MWH of electricity storage

**Net Power’s Economics Are Different**

- Most carbon capture projects struggle in a high renewables world because of the challenge of low capacity factors.
- **Net Power retains its advantage over CCGT regardless of capacity factor, because Net Power’s CapEx-OpEx ratio is equivalent to CCGT.**