2012 GGF DEMONSTRATION
Great Green Fleet – RIMPAC 2012

- 1,800 hours of shipboard gas turbine operation
- 240 flight hours
- Four ship-to-ship RAS evolutions
- One air-to-air refueling
- No operational differences noted:
  - Logistics Infrastructure
  - Ship power plants and aircraft
- Filters operated more efficiently due to fewer impurities in the fuel
- What’s next – get to 2016
DPA Title III Advanced Drop-in Biofuels Production Project

- Multiple, Commercial Scale Integrated Biorefineries
- Drop-in fully compatible MILSPEC fuels (F-76, JP-5,8)
- $510M Agency Funding (total planned)
- No More Than a 50% Cost Share from Gov’t
- Cost-competitive with conventional petroleum w/o subsidies
- Produced domestically; non-food feedstock
As of June 19th, 4 Phase 1 awards have been made

Potential for 170 million gallons of drop-in compatible MILSPEC fuels (F-76, JP-5,8) to start production by 2016

Weighted average price in 2013 dollars <$4/gal

Project has $100 million in FY12 funds from DOD, $60 million in FY13 from USN that can’t be reprogrammed

USDA has contributed $161 million in CCC funds

Phase 2 awards set to begin July 2014
  – Construction and commissioning
<table>
<thead>
<tr>
<th>Company</th>
<th>Location</th>
<th>Feedstock</th>
<th>Conversion Pathway</th>
<th>Capacity (MM gpy)</th>
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<tbody>
<tr>
<td>Emerald Biofuels</td>
<td>Gulf Coast</td>
<td>Fats, Oils, and Greases</td>
<td>Hydroprocessed Esters and Fatty Acids (HEFA)</td>
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<td>Natures BioReserve™</td>
<td>South Sioux City, NE</td>
<td>Fats, Oils, and Greases</td>
<td>Hydroprocessed Esters and Fatty Acids (HEFA)</td>
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<td>Fulcrum Bioenergy</td>
<td>Western United States</td>
<td>Municipal Solid Waste</td>
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<td>Lakeview, OR</td>
<td>Woody Biomass</td>
<td>Gasification – Fischer Tröpsch (FT)</td>
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THANK YOU

F/A-18E
Mt. McKinley, Alaska