Feedstock & Feedstock Systems

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Feedstock and Feedstock Systems For “Island Scale” in Hawaii (10-20mgy)

- **Goal**
  - **Cellulosic** (High (6-9))
  - **Oil Seed** (Low (1-5))

**Fuel Readiness level (FRL)**
- Low (1-5)
- High (6-9)

**Feedstock Readiness Level (FSRL)**
- High (6-9)
- Low (1-5)

Contributed by University of Hawaii Applied Research Laboratory
Tropical Bioresources and Pathways to AJF

- Sugarcane
- Fiber Sorghum
- Sesbania
- Glyricidia
- Energycane
- Banaggrass
- Eucalyptus
- Leucaena
- Rice Residues
- Jatropha
- Kamani
- Pongamia
- Croton megalocarpus
- Oil Palm

Extraction → Sugars → Bioprocessing → Synthesis Gas

- Fiber
- Hydrolysis
- Algae

Fiber → Bioprocessing → Synthesis Gas

Pretreatment → Municipal Solid Waste

- Extraction → Oil

Pyrolysis → Catalytic Hydrothermolysis

- Extraction → Oil

Hydrolysis → Synthesized Iso-Paraffins

Hydro-processing → Synthesized Paraffinic Kerosene

Gasification & Gas Clean Up → Fischer Tropsch Synthesis

Hydro-processing → Synthesized Paraffinic Kerosene w/ Aromatics

Pyrolysis → Synthesized Paraffinic Kerosene

Thermo-processing → Synthesized Kerosene & Aromatic Kerosene

Waste FOG

Blue – Commercial elsewhere
Pink – Commercial in Hawaii
Orange – Under Development

Crops
Intermediate Products & Conversion Technologies
Alternative Jet Fuel
Physicochemical Characteristics

- Thermochemical – ultimate, proximate, heating value, ash composition
- Biochemical – cellulose, hemicellulose, lignin composition
- Oil content and composition
- Feedstock handling -- bulk density, grinding/densification energy requirements, etc.
Resource Availability

Feedstock Production  Feedstock Logistics  Conversion  Distribution  End Use

Agriculture ---- Industry ---- Investors ---- Government ---- Community

- Land
- Water
- Infrastructure
- Technology

- Financial Incentives
- Human Resources
- Sustainability
- Policy
How do crops/feedstocks fit on the landscape and what are their technical potentials based on climatic/soils/political/geographic constraints?