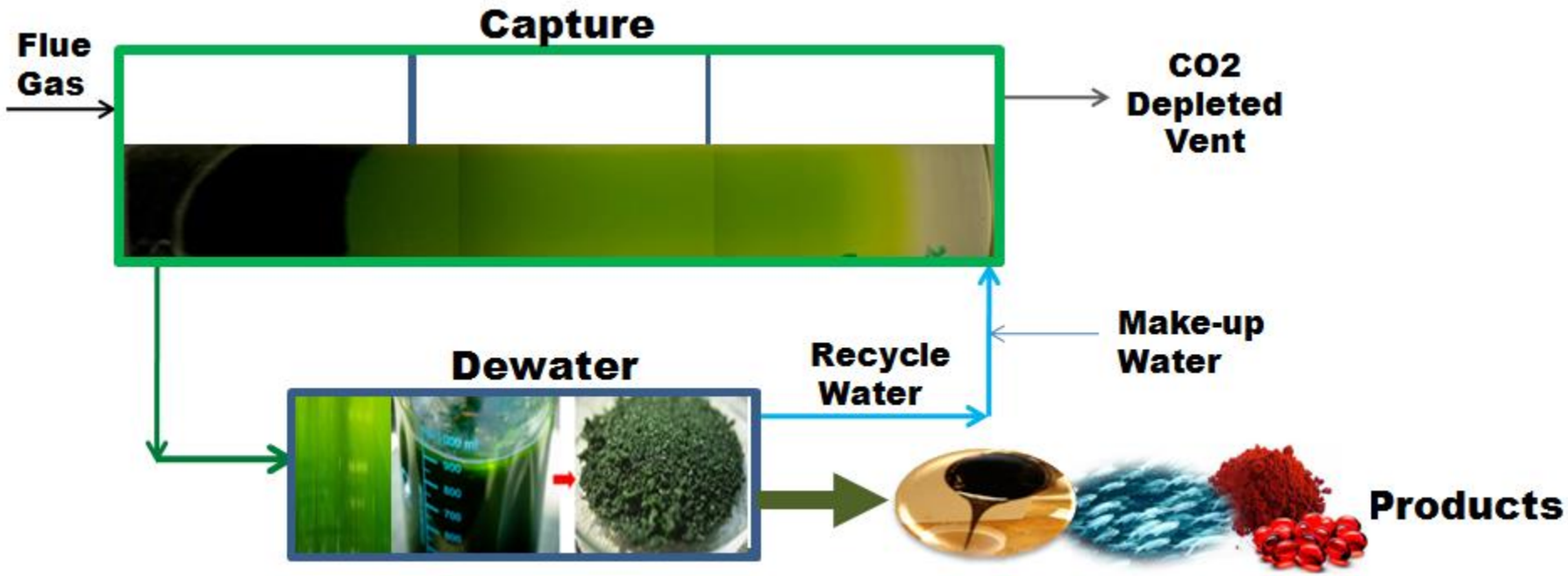
Novel Algae Technology to Utilize CO_2 for Value Added Products

CCUSOGT Review Meeting
Aug 29, 2019, Pittsburgh, PA



NETL/DOE Federal Project Manager: Sai Gollakota

NATIONAL ENERGY TECHNOLOGY LABORATORY
Helios-NRG, LLC
Northwestern University
Linde
MTR Membrane Technology & Research
NATIONAL CARBON CAPTURE CENTER

General Project Information

- **Title:** ***Novel Algae Technology to Utilize CO_2 for Value Added Products***
  - Recipient: Helios-NRG, LLC
  - **PI:** Fred Harrington, PhD, Chief Scientist
  - **Project Partners:**
    - **University at Buffalo**
    - **Linde**
    - **Northwestern University**
    - **Membrane Technology & Research**
    - **National Carbon Capture Center**
- **Project Funding:**
  - Total: $1,734,486 Government: $1,387,588 Cost Share: $346,898
- **Project Period: 5/1/19 – 7/31/22**

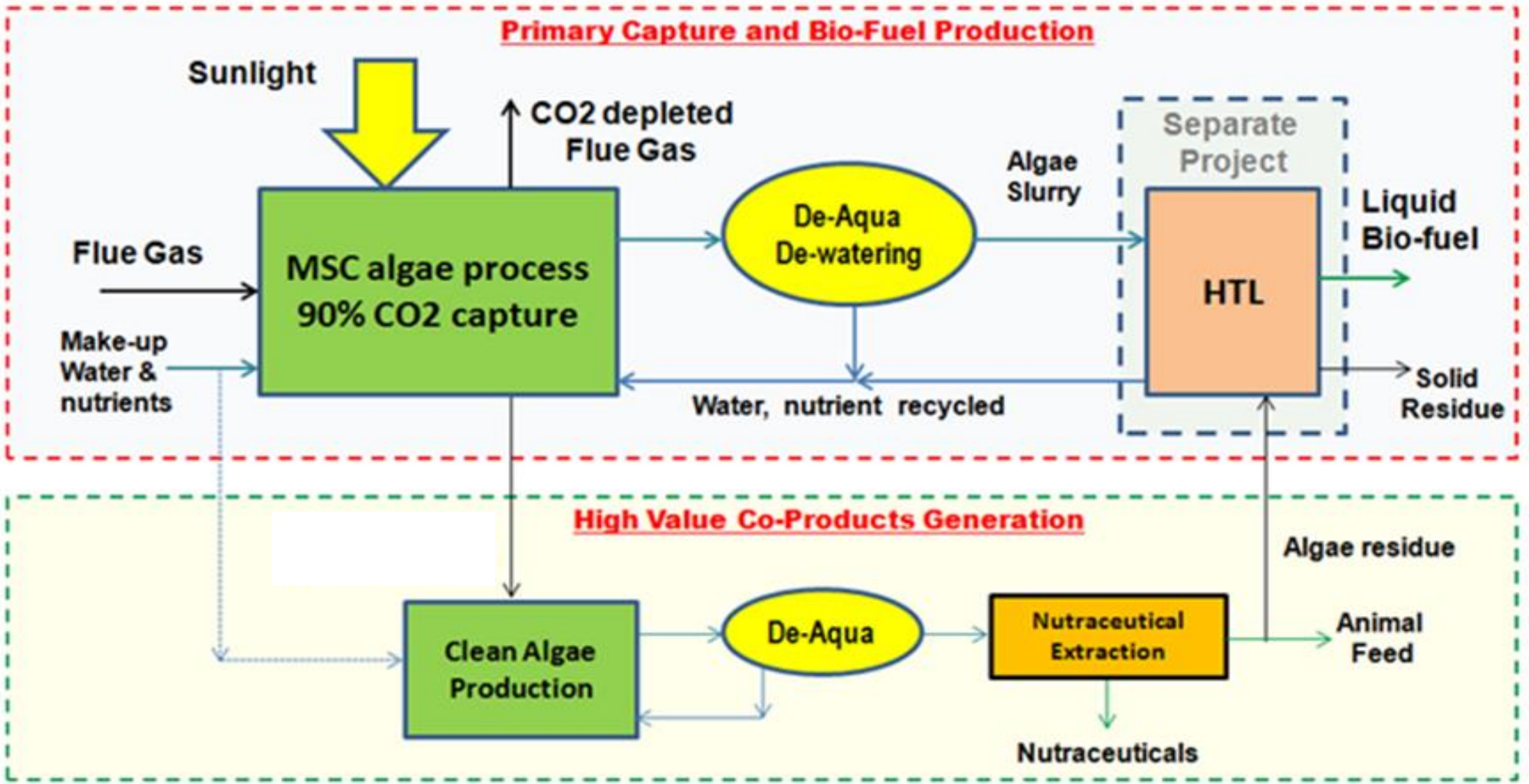
Overall Strategy

- ***To be competitive, a revenue stream is required to offset the cost of CO_2 capture from coal power plants***

- **Develop algae technology with high CO_2 capture efficiency and productivity**
  - Efficient upstream & downstream process integration
  - Controllable and predictable system

- **Reduce capture cost via product revenue, operational efficiency, credits**
  - Bio-fuels; Animal feed; Nutraceuticals
  - Low cost dewatering
  - Credits from use of wastewater nutrients

Overall Process Schematic



Project Objectives

- Develop & demonstrate design of capture system
- Validate potential for 2 nutraceuticals with high value
- Develop dewatering technology with 50% reduction in energy use
- Conduct field test with real flue gas
- Perform LCA & TEA

Project Schedule

Task #	Task Title	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13
	Overall Project													
1	Project Management and Planning													
2	Design, build, operate MSC system													
3	Optimize Nutraceuticals production													
4	Advance DeAqua Gravity Table Performance													
5	Advance DeAqua Anti-fouling Membrane													
6	DeAqua Module Performance Tests													
7	Field Test of Carbon Capture													
8	Life Cycle Assessment													
9	Perform Techno-economics Analysis													

Acknowledgement

This material is based upon work supported by the Department of Energy under Award Number DE-FE-0031710.

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