# THE ROADMAP FOR ACHIEVING HIGH BLENDS OF BIODIESEL IN HEATING OIL

## STRATEGIC PARTNERS

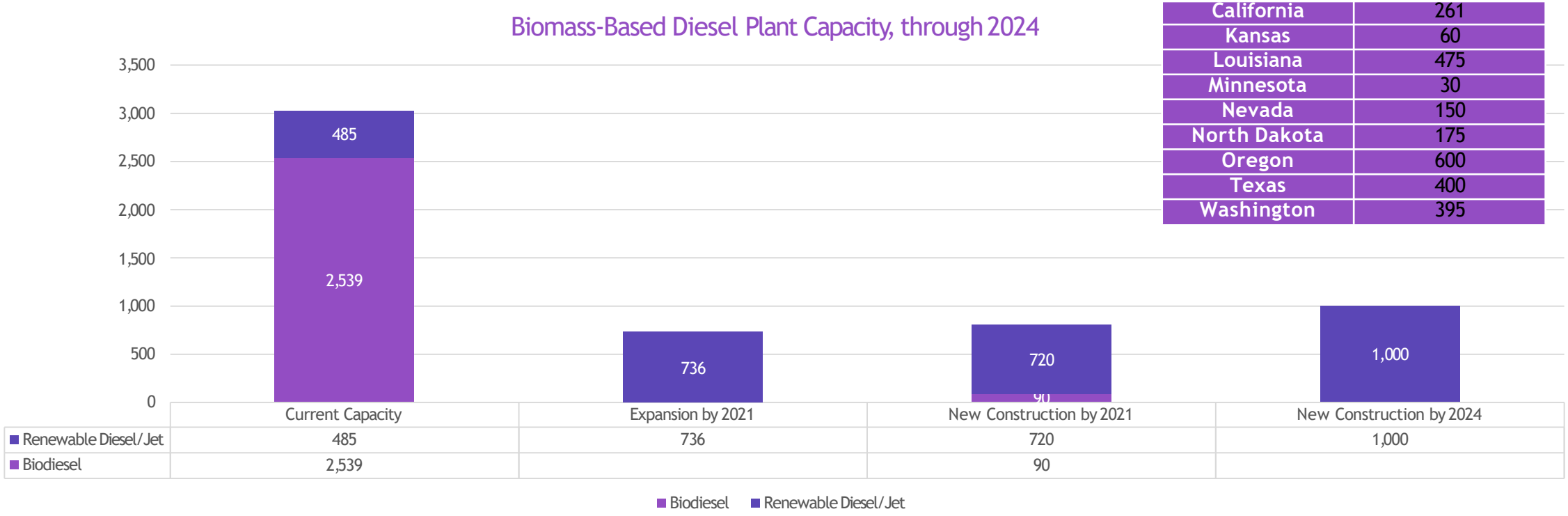
NBB, NORA, NEFI, STATES

# CHALLENGES

- **Feedstock Availability**
- Type, Soybean Oil, UCO, YG, Animal Fats, DCO, (Winter Annual Oil Seeds, Covercress, Brassica Carinta)
  - Volumes, Current, 3.0 BGY, Anticipated Increases in Feedstock, 4.0 – 4.5 BGY (2023)
  - Time Lines, CA, 1.8, Remainder of Country, 1.5, Leaving 2.0 BGY for Heating Oil
- **Production Capacity**
  - Nationally
  - Regionally, Kolmar, 30 MGY, Newport, 7 MGY,
  - Biodiesel/Renewable Diesel, RD, REG, World Energy, Valero/Darling
    - NESTE, Phillips 66, Andeavor, Sinclair (toll processor), NEXT
- **Distribution Capacity & Constraints**
  - Home Heating Oil, New England & Mid-Atlantic
    - Deep water, inland, necessitate automation
  - Transition Time To Prepare Assets For Ratable, Operational Sound Distribution
    - Permitting, deployment, # years for B50 and beyond, likely will build out for B100 at this early stage.
  - Product Heating/Handling
    - Pour points, manageable up to 50%, >50% HEAT, system wide, $
  - Rail, Water, Pipeline
    - Can rail manage increased volumes, unit trains, November through March

| STATE | Capacity (mgpy) | STATE | Capacity (mgpy) |
|---|---|---|---|
| Alabama | 20 | Missouri | 252 |
| Arizona | 2 | Nebraska | 53 |
| Arkansas | 115 | New Mexico | 1 |
| California | 133 | North Carolina | 8 |
| Connecticut | 30 | North Dakota | 85 |
| Florida | 13 | Ohio | 71 |
| Georgia | 19 | Oklahoma | 38 |
| Hawaii | 6 | Oregon | 17 |
| Illinois | 184 | Pennsylvania | 90 |
| Indiana | 107 | Rhode Island | 7 |
| Iowa | 445 | South Carolina | 5 |
| Kansas | 0 | Tennessee | 38 |
| Kentucky | 54 | Texas | 391 |
| Louisiana | 350 | Utah | 40 |
| Maine | 1 | Virginia | 9 |
| Massachusets | 1 | Washington | 112 |
| Michigan | 18 | Wisconsin | 32 |
| Minnesota | 85 | Wyoming | 90 |
| Mississippi | 102 | | |
| **US Biomass-based Diesel Fuel Capacity = 3.02 billion gallons** | | | |

# U.S. BIOMASS-BASED DIESEL INDUSTRY CAN MEET INCREASED VOLUMES




| State | Capacity (million gallons) |
|---|---|
| California | 261 |
| Kansas | 60 |
| Louisiana | 475 |
| Minnesota | 30 |
| Nevada | 150 |
| North Dakota | 175 |
| Oregon | 600 |
| Texas | 400 |
| Washington | 395 |

- The United States has more than 3 billion gallons of operating biodiesel and renewable diesel capacity
  - Overall, there is 4.2 billion gallons of registered capacity, according to EPA.
  - There are additional announced plans to build or expand 2.5 billiongallons.
- In 2018, U.S. biomass-based diesel production increased by more than 300 million gallons, according to EPA.

# CHALLENGES

- **Downstream Infrastructure**
  - Tankage, In-Land Terminal Viability, Tanks, Pipes, Injectors, Acculoaders
- **Consumption Capacity, Projected Valuations**
  - Weather Related Projections
  - Natural Gas
  - Propane
  - Electric Heat Pumps
- **Imports**
  - Impact Of Argentina Supply Resurgence
    - If trade case gets overturned how will increase supply benefit heating oil markets, disadvantage biodiesel
- **Barriers To Transporting, Storing & Blending**
  - Terminal Commitments
  - Financial Recovery For Upgrades
  - Hedging/Storage/Inventory Build

# CHALLENGES

- **Competitive Environment For Supply, CARB, MN, IL, Others**
  - Biodiesel Producers Elective, West Coast, Strong Mandated State Demand, Truck Stops, Arbitrage
  - Great opportunity for SME feedstocks to go East for Heating Oil
- **Retailer Restraints**
  - Evaluating The Actual Commitment, Concerns About
    - Supply
    - Cost
    - Operational Performance
    - Commitment To Uphold Resolution
    - Testing, % of FAME, Over blend/Under blend

# FACTORS WHICH CHALLENGE OUR SUCCESS

- Co-processed diesel? Do we need to insist upon a renewable diesel quality specification?
  - Impact on domestic producers?
- Trade case, unknown?
  - Will coastline be recipient of foreign fuel even if it is even to the screen?
- East Coast biodiesel supply, logistics, storage, distribution of domestic production
  - Will it be there? Build it, and they will come.
- RIN valuations? A lot here to be determined in the next 90 days, landscape might improve on the transparency regarding RINS
  - No demand, shock absorber between biodiesel & diesel fuel.
  - Will they elevate, does SRE prohibit this?
  - Market demands will increase the RIN value.
  - If we want more gallons of biodiesel into the market place the RIN is the signal, means obligated parties need more RINS and will pay more for the RIN.

# FACTORS WHICH CHALLENGE OUR SUCCESS

- Blenders tax credit status?
  - When and for how long?
- Unclear understanding of Bioheat®, dealer, leadership & consumer? Do we need to create a universal marketing educational outreach to the consumer?
- OEM positions, warrantees and representations?
  - On-road, >20%, off road, heating oil, >5%
- Small refinery exceptions? TBD
- Historical perspective about the fuel, past doesn't define the future?
  - Education required constantly about biodiesel especially contrasting and complimenting with renewable diesel.
- Soft crude pricing
  - Biodiesel industry would like to see $70-$80 BBL Crude.

# POLICY

- Federal & Regional Policy Issues, (NORA, (fund a study) NEFI, States, TCI, Power Generation
- BTC, SRE, Trade Case, Tariff's, RFS, RIN's
  - Regional Air Quality Groups, REGGI, TCI, Transportation Climate Initiative, NESCAUM
  - Policy of ISO's, Power Generation, Emissions
  - Varied State Challenges
    - MA, RI, CT, NY, NJ, ME, NH,

# INCENTIVE VS MANDATE/STANDARD

- NY State & New England Need To Be On The Same Page……
  - Average time line to drive change, (November 2, 2020)
  - Resolution, 15% by 2023
  - Resolution, 40% by 2030
  - Resolution, Net Zero by 2050
  - Reduction on emissions over 1990
    - 20%
    - 50%
    - 100%

# COMMENT

- 1) **Where are we currently as an industry**
  - Which state executives plan to advocate for higher blends, are they fully supported by Board and Membership

- 2) **What do those in the oil heat family think**

  - Wholesalers and Suppliers-Infrastructure Investments? (If they see ratable and sustained demand they will align for distribution)
  - API in States (This organization is as predictable as Beckett, not much to chat about with the equipment manufacturers – Warranty Issues (Specifically with Beckett, >B20 or more stands no chance to being adopted by a company disinterested with >5%
  - Non-Burner Components of System (We always focused on burners but clearly we should open our notebooks on all work to date to all the manufacturers. My recommendation, Dr. Tom or Steve Howell send a executive summary to all related equipment manufacturers or OMA directly giving them an update on our body of data as well our intentions to advance the blends in the spirit of maintaining an liquid fuels platform.

- 3) **What is best Way to Move in this Direction- Industry Support/Legislative Response**
  - (TBD once we know we have support from the states. Maybe their feedback from their respective boards will shed light on what each state believes would be best for their respective area)

  - LCFS

    Cap and Trade Fuel Standard

    Tax and Incentives

# COMMENTS

- 4) **Technical Challenges**
  - Supply and Long Term Issues with Liquid Renewable Fuel Availability (This is the area where our efforts would be best invested)
  - Equipment – All Burners?
  - Outdoor Storage
  - Supply and Distribution
  - Cold Weather Distribution Issues
  - Corrosion Issues

- 5) **Communication**
  - (Until we answer the questions above we cannot build a communication program outside communication/education to fuel dealers, wholesalers, stakeholders on our mission. Outreach, brochures, etc.

- 6) **Developing Friends** (The question, who takes the lead, NORA, NEFI, State Leadership Groups?)
  - NESCAUM

    Conservation Law Foundation

# COMMENTS

- Georgetown Climate Center, TCI Listening Sessions
- 7) People to Shepherd Process
  - State Executives
  - Retailers from Affected States
  - Meetings?
- 8) Resolving Regulatory Challenges
  - ASTM, NFPA, UL, etc.

# Bioheat® "It's Uncompetitive", Is it?

- One family residence in Methuen, MA
- Square footage of conditioned space: 1,902
- Facility construction type: Retrofit
- Prior Heating System:
  - Oil
  - Heating distribution type: Baseboard
  - Did you have a supplementary fuel type?: No
- Air Source Heat Pump Renewable Thermal Installation Details:
  - Renewable thermal distribution type: Baseboard
  - Renewable thermal system utilization as percentage of the facility annual heating load: 95%
  - Do you have a supplementary fuel type?: Yes
  - Supplementary fuel type after renewable thermal generation unit installation: Oil
  - Supplementary fuel type utilization as percentage of the facility annual heating load: 5%
  - Installer: NETR LLC
  - Date in service: 6-26-2019
  - Heat pump manufacturer: Mitsubishi Electric Cooling & Heating
  - Heat pump model: MXZ-5C42NAHZ
  - Heat pump quantity: 5
  - **Total system cost: $23,046**
  - Was a rebate received from MassCEC?: No
  - Did you receive any additional public funding?: No