Sustainable TRANSPORTATION

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Optima Program Overview

John Farrell
Optima Stakeholder Listening Day
June 16, 2015

what is Optima?

multi office

multi lab

multi year

initiative

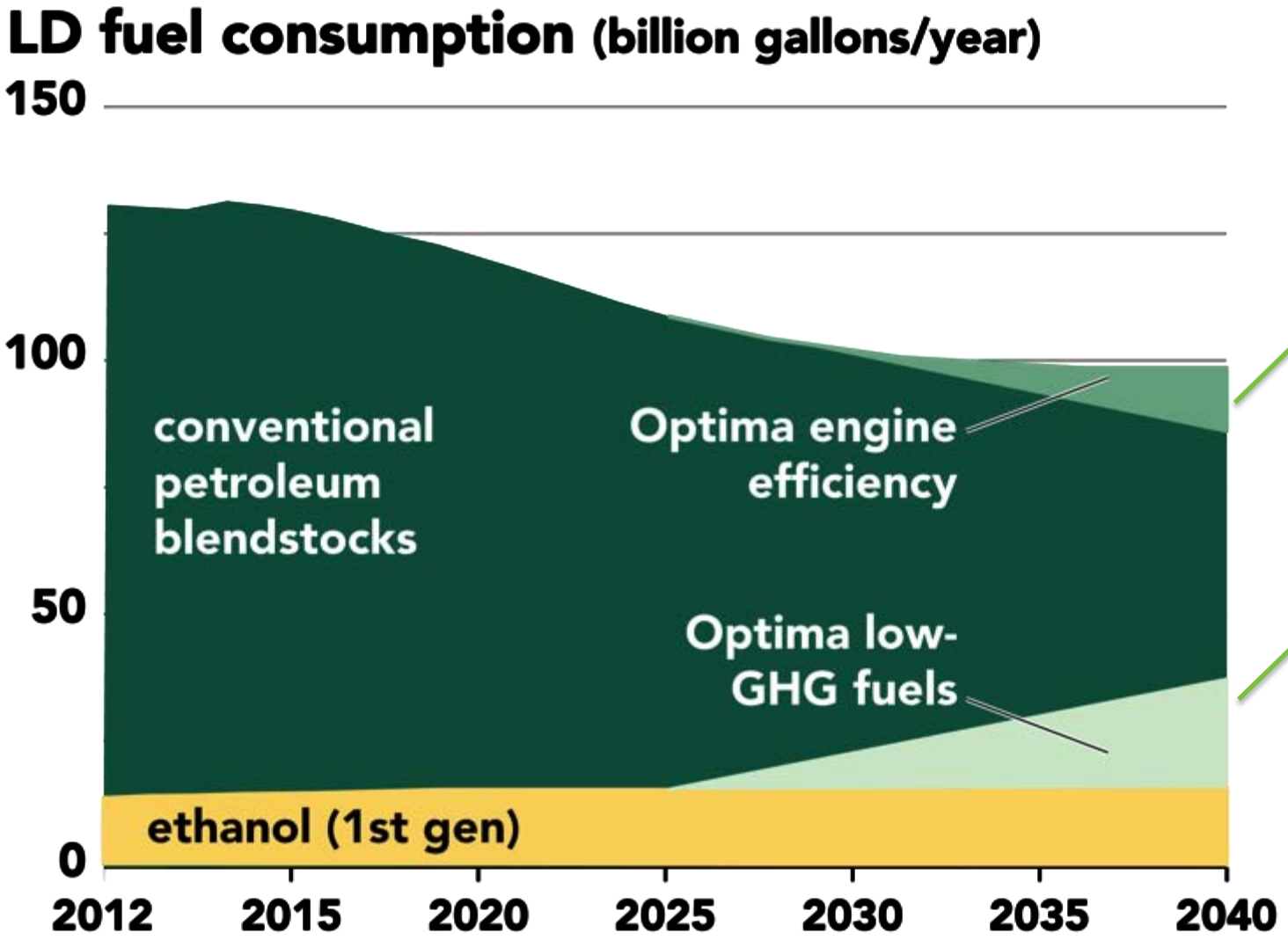
BIOENERGY TECHNOLOGIES OFFICE

VEHICLE TECHNOLOGIES OFFICE

approach: co-optimize fuels and engines

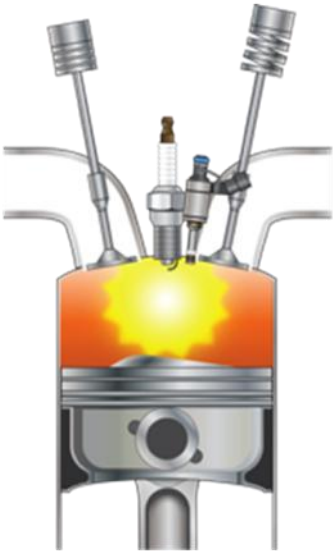
accelerate, coordinate, and focus

30% per vehicle petroleum reduction via efficiency and displacement



Optima research thrust 1

spark ignition (SI)

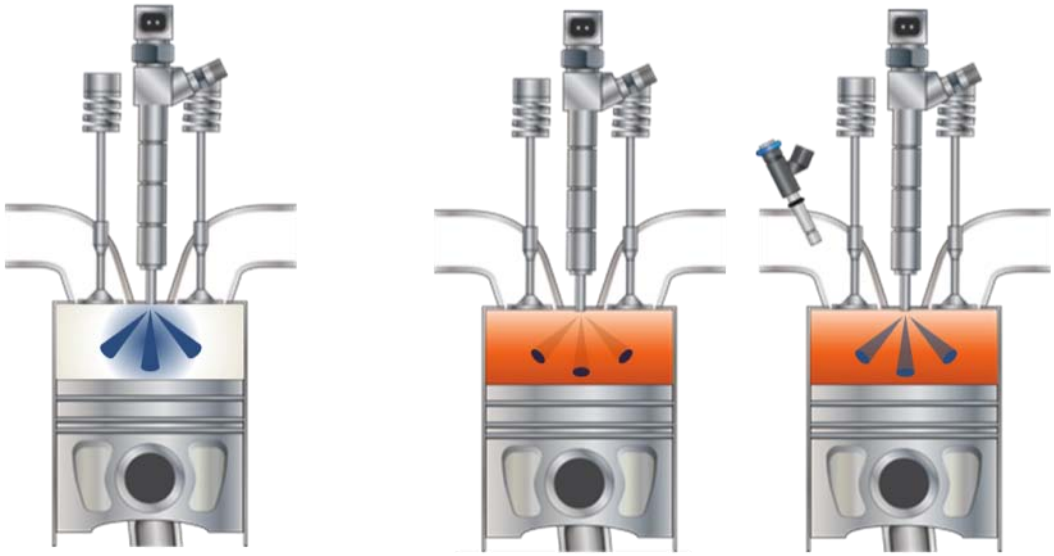


Low Reactivity Fuel (gasoline) high RON

Provide scientific basis to develop optimal fuel/engine systems for spark ignition engines with market introduction by 2025

Optima research thrust 2

Advanced compression ignition (ACI)
including low temperature, kinetic regimes



High Reactivity Fuel
(diesel)
high cetane

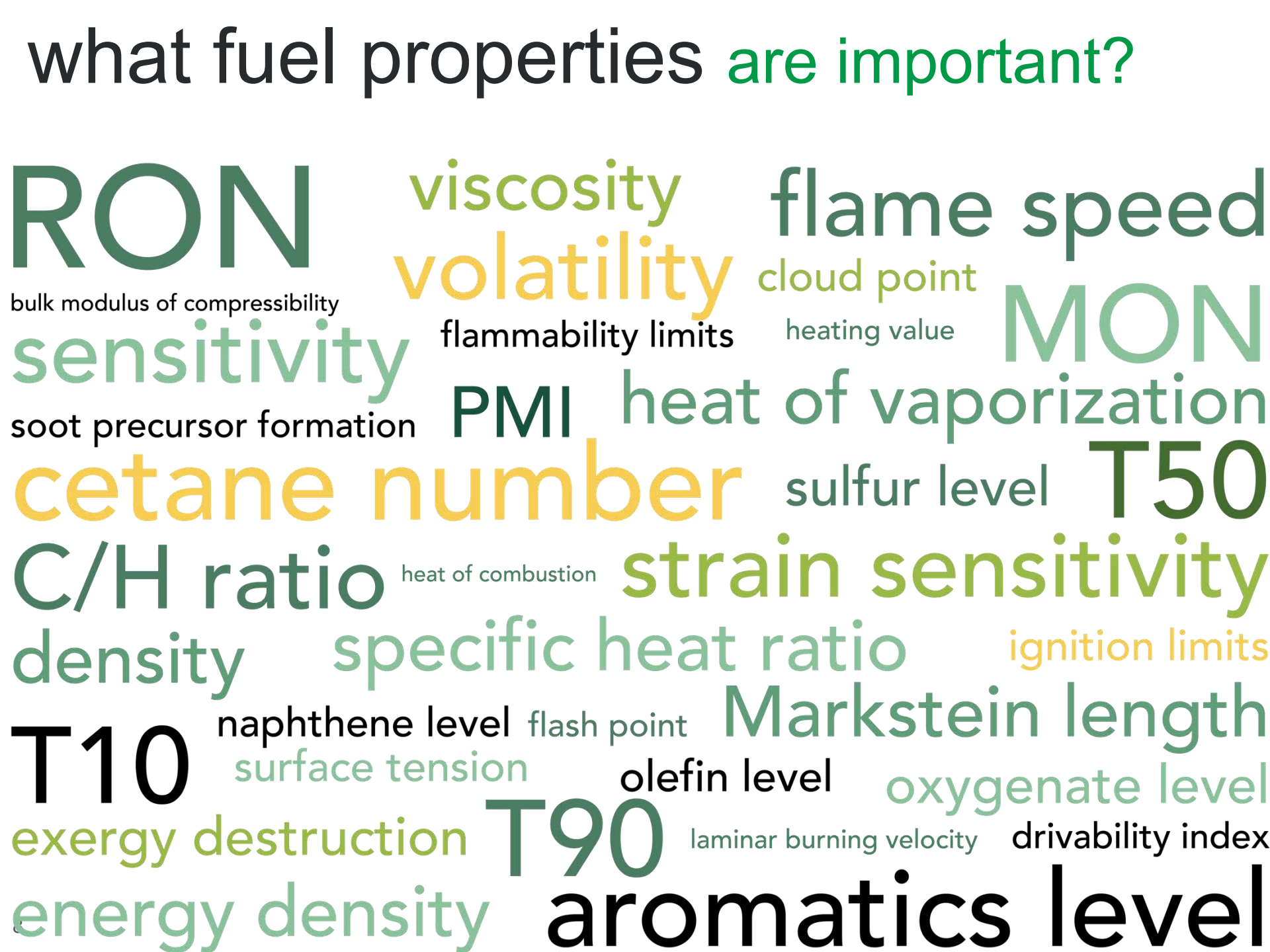
Range of Fuel Properties TBD
(new fuel)
undetermined fuel needs

Advanced compression ignition with fuels that enable maximum engine performance with minimal emissions with 2030 commercial introduction

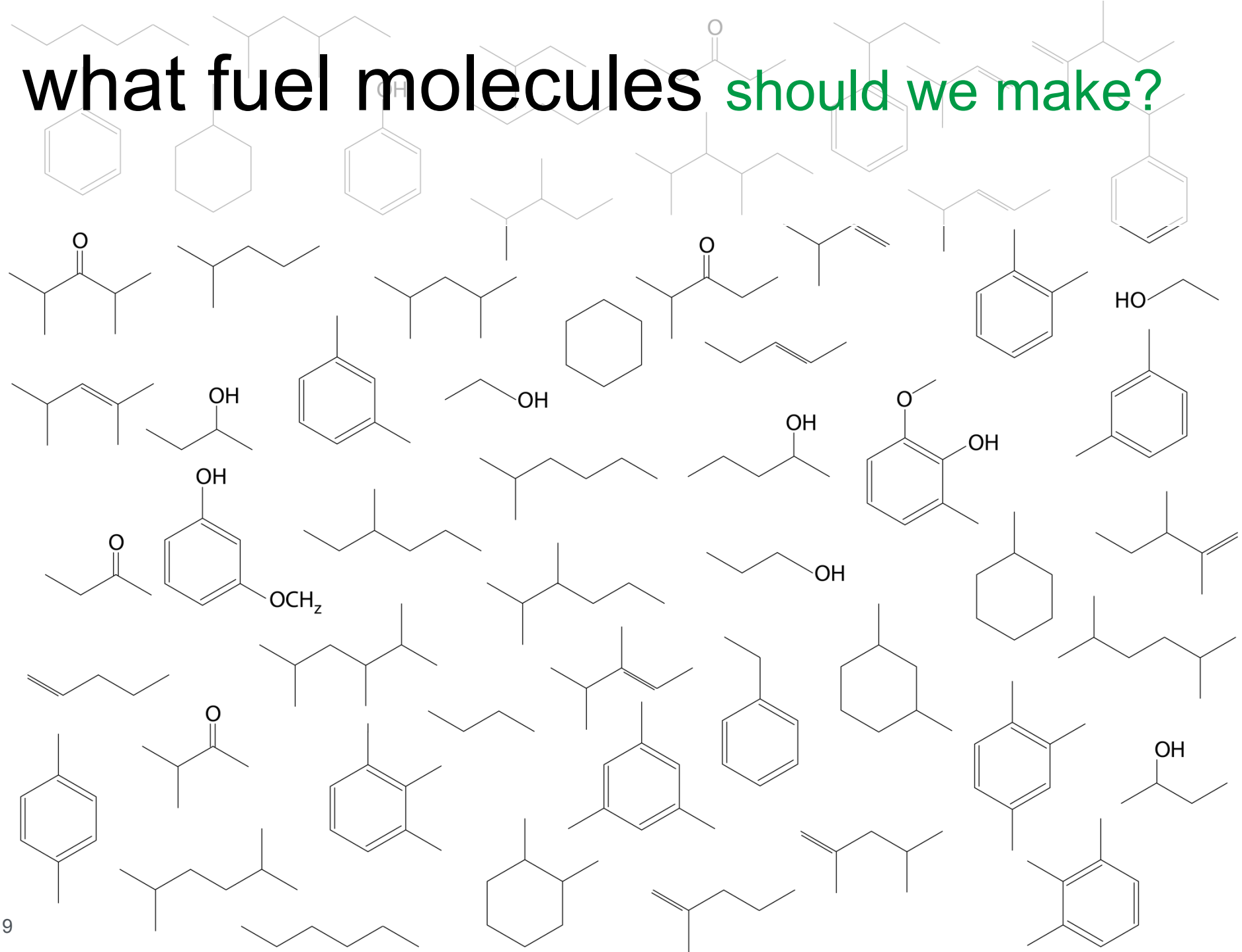
Optima evaluation criteria

1. GHG reduction
2. Petroleum reduction
3. Engine/powertrain/vehicle performance
4. Incremental fuel cost
5. Incremental vehicle cost
6. Land/water use
7. Infrastructure compatibility
8. Emissions/aftertreatment
9. Health effects
10. Legacy fleet compatibility
11. Consumer acceptance
12. Scalability
13. Global product harmonization

what fuel properties are important?



what fuel molecules should we make?

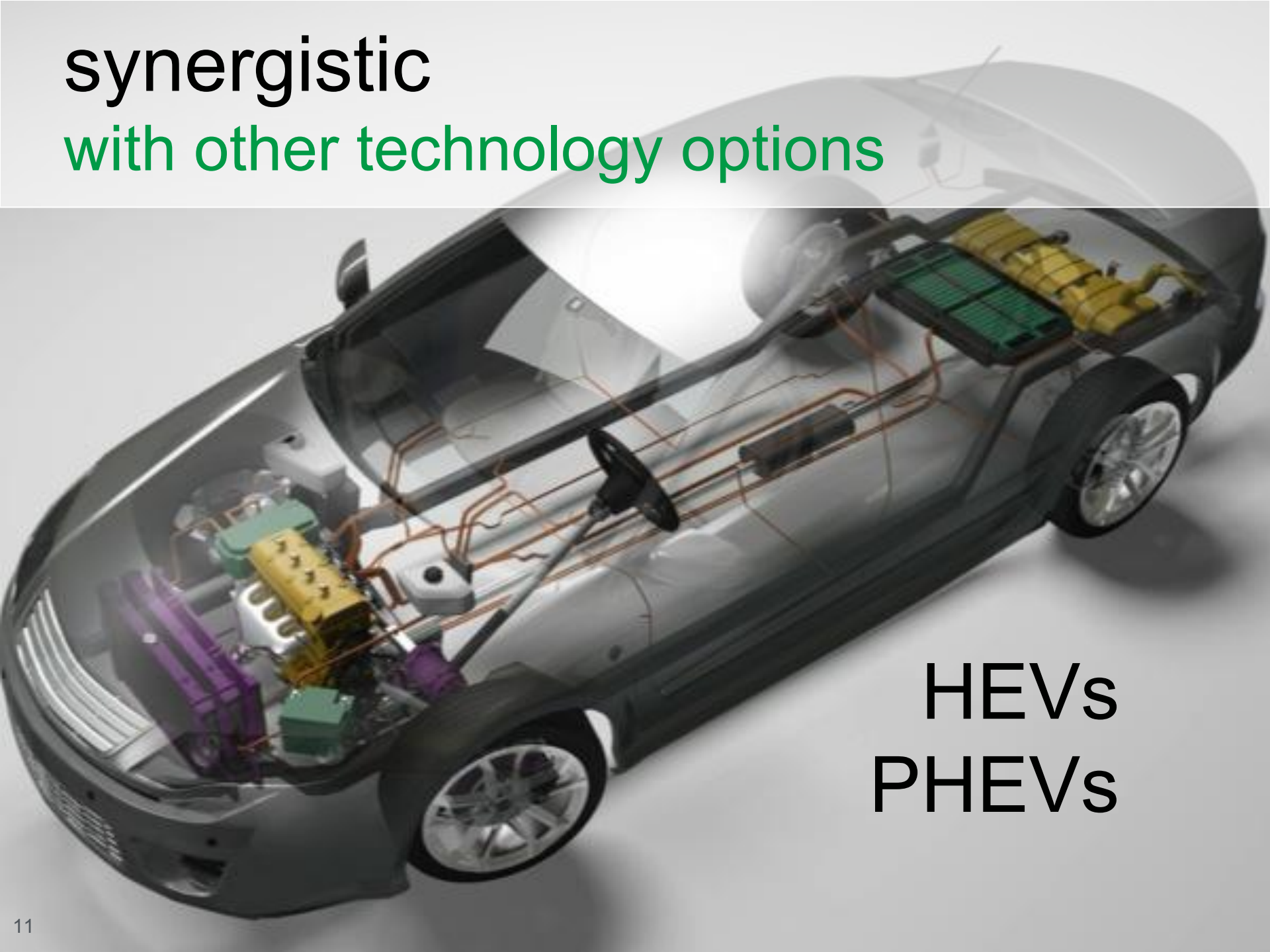


applicable to

light, medium, and heavy-duty

engines

synergistic
with other technology options



summary and next steps

Summary

- Optima included in President's FY16 budget request at $27M
- Selected as "Big Idea" at DOE Idea Summit in April
- First industry "Listening Day" held June 2015

Next Steps:

- Finish draft of three-year R&D plan and project roadmap
- Continue engaging with stakeholders
- Target Oct 1 start


better fuels
and
better vehicles
sooner