

Biomass: What's Out There?

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Biomass. It's, like, out there.



What Do We Know?

- Biomass Energy: Desires and Projections
- Regional Inventory
 - current stock
 - current growth and harvest
 - limitations
- Landowner/Project Inventory
 - existing techniques
 - emerging techniques

An “Optimistic” Scenario

- Analysis by US Dept of Energy¹
- Assumes 25% renewable portfolio and 25% renewable fuels by 2025
- Biomass is 50% of renewable electricity
- Requires 4.3 million gallons of cellulosic ethanol and 300 billion kWh of electricity from woody biomass
- Price for biomass rises from \$30/ton (2005) to \$88/ton (2030)

¹US DOE. 2007. Energy and Economic Impacts of Implementing Both a 25-Percent RPS and a 25-Percent RFS by 2025. Report #: SR-OIAF/2007-05.

Is that good news?

- To meet those goals, annual roundwood harvest in the US would have to double²
- Nationally, biomass for energy competes with other uses of a finite supply
 - can we make paper if wood is at \$88/ton?
 - can we make pallets if wood is at \$88/ton (approx. \$400-700/MBF)?
 - will we grow sawlogs at all if small-diameter wood fetches that kind of money?

¹Pinchot Institute for Conservation. 2009. What Role Will Forests Play in America's Long-Term Energy Future?

Could it even happen?

- DOE Report: that scenario implies cumulative discounted GDP losses of \$300 billion by 2030
- DOE Report: “Big changes in the energy system, especially when implemented quickly, come with numerous uncertainties, the impacts of which may not be fully captured in this study...”

What Is Likely?

- Renewables will increase, and forest biomass will play some role
- Prices for “biomass-grade” roundwood will increase
 - at the gate... but what about stumpage?
 - harvesting and transportation costs?
 - will it come from local sources?
- Biological supply *may* be a constraint
- Social acceptability *will* be a constraint

What is the Available Regional Supply?

- Primary source of data: USFS FIA
- Look at Guild NE region: Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Pennsylvania, Maryland, and Delaware
- Statistics from 2006

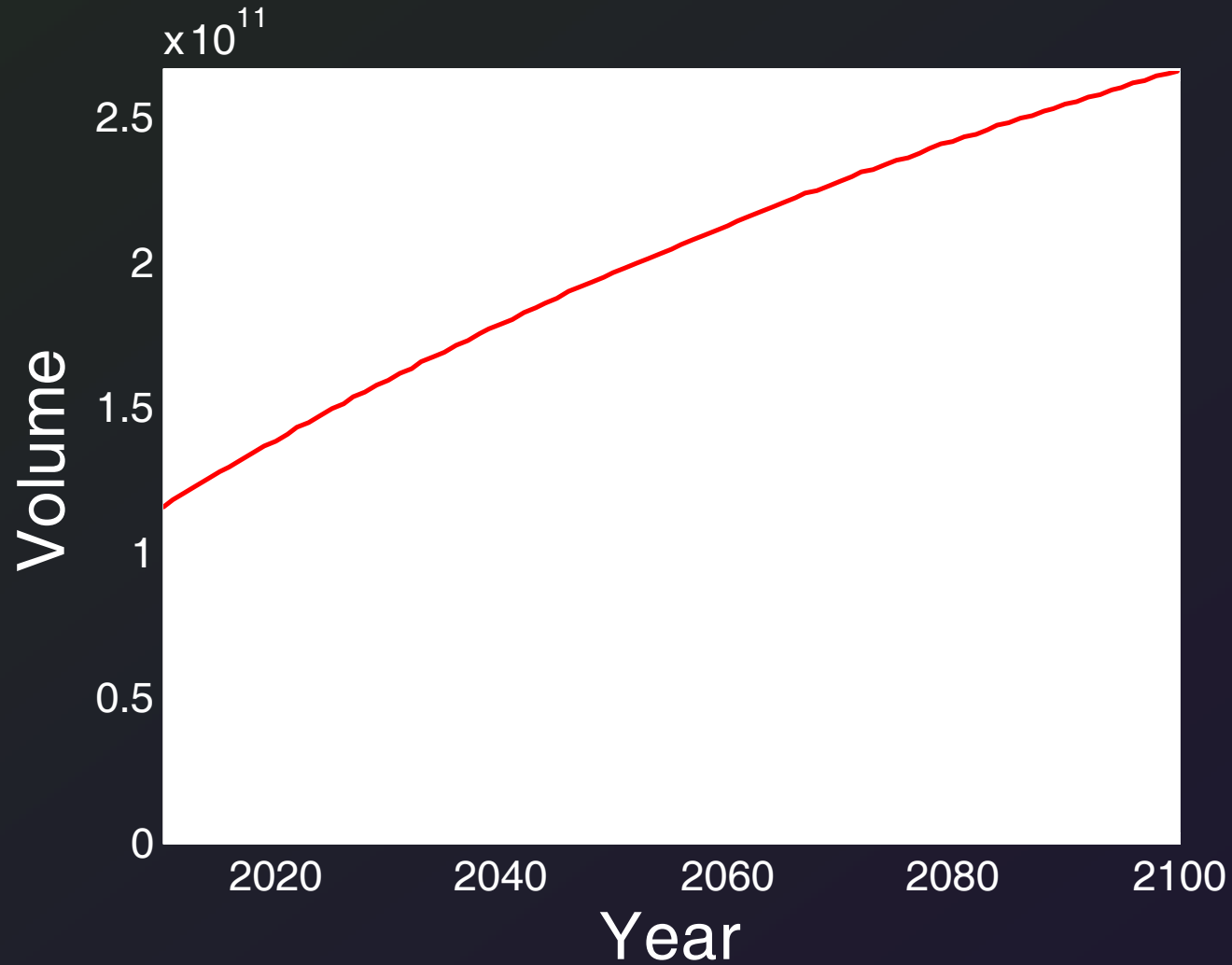


“Just the facts, ma’am.”

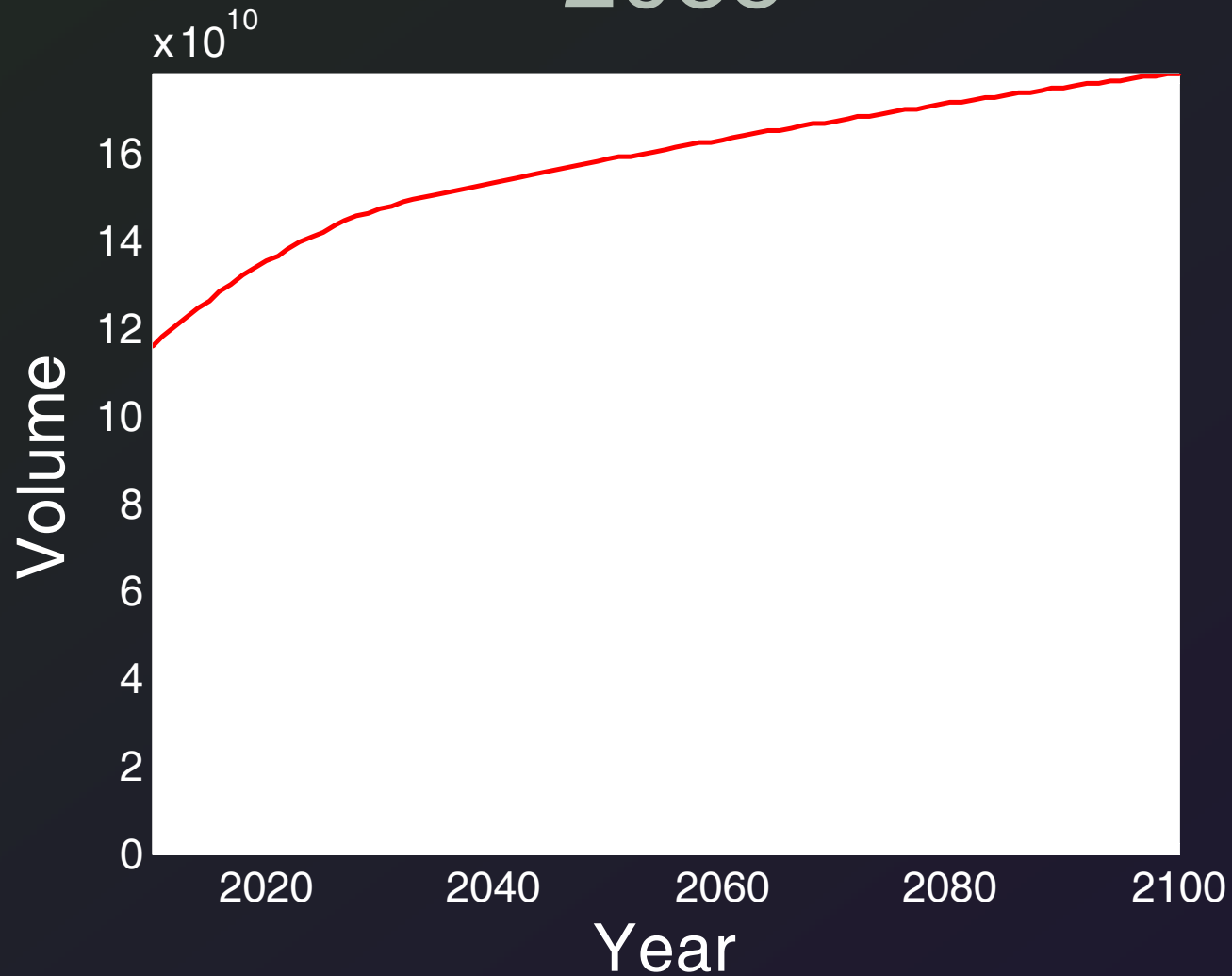
FIA Statistics

- Current volume: 115.9 billion cubic feet
- Annual growth: 4.8 billion cubic feet
- Annual harvest: 1.5 billion cubic feet
- Annual mortality: 0.95 billion cubic feet
=0.82% of volume

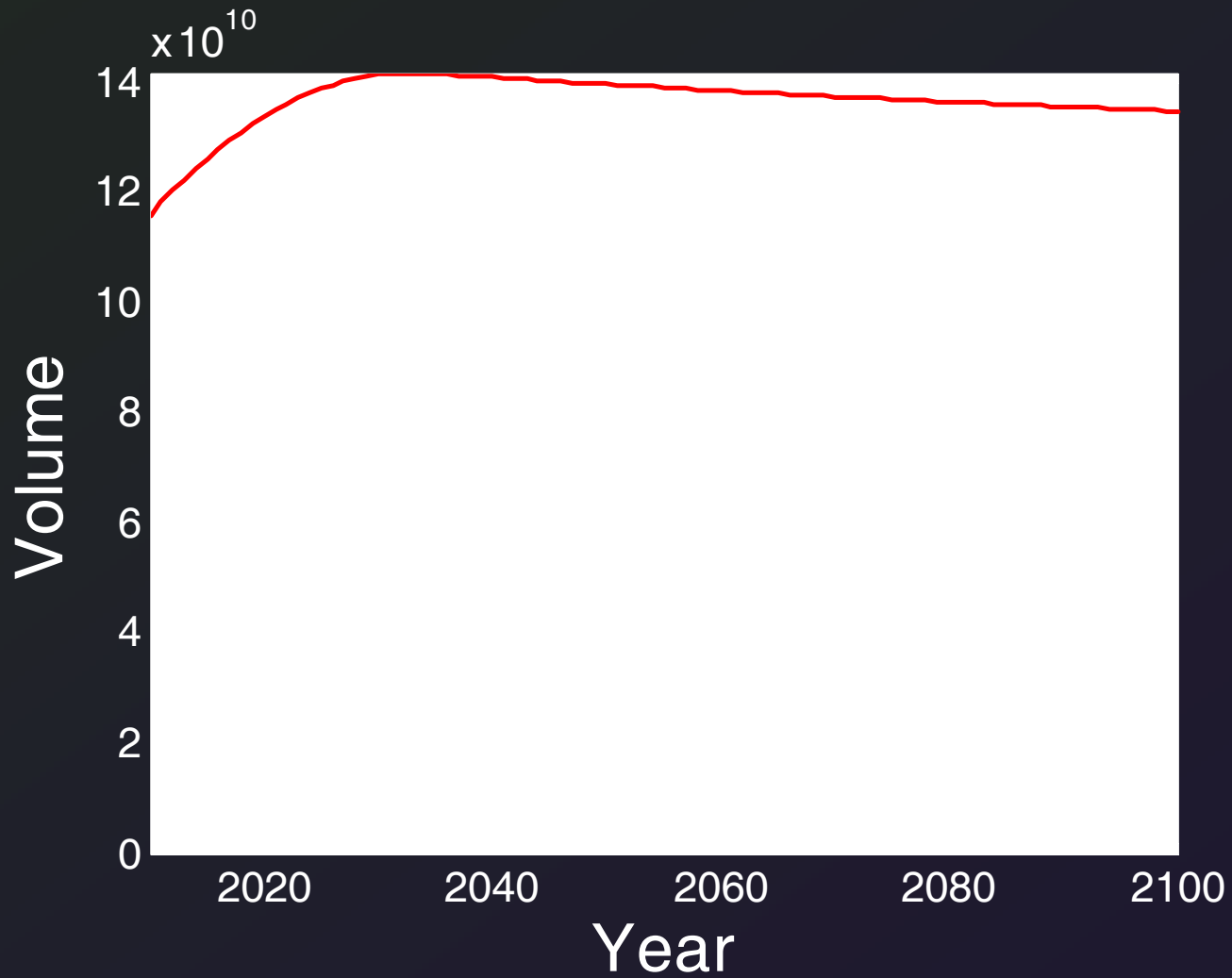
Projection: Base Case



Projection: Double Harvest by 2035



Projection: 2.5x Harvest



Regional Variability

- Where does bioenergy *substitute* for pulp?
- Where does bioenergy constitute a *new* market?
- Where are resources already under too much pressure?
 - overharvesting
 - land cover change
 - land use change (parcelization)

CHARLTON HESTON LEIGH TAYLOR-YOUNG

SOYLENT GREEN



It's the year 2022. People are still the same.
They'll do anything to get what they need.
and they need SOYLENT GREEN.

It's People!!!

What FIA data cannot do...

- FIA data alone cannot predict who will be willing to sell biomass, at what price
- Delivered price vs. stumpage price
- What kinds of landowners would sell biomass at \$5/ton?
- What kinds of landowners would sell biomass at \$50/ton?
- What are the non-market impacts?

What Can You Do?

- Respond to needs and desires of clients
- Respond to opportunities in your local markets
- Use bioenergy to support GOOD silviculture
 - focus on quality sawlog production
 - low-grade as a by-product, not an end goal
- Keep inventory efficient

Efficient Inventory for Biomass

- Biomass is very similar to cubic volume
- Prism sampling, enhanced with
 - point double sampling
 - Big BAF sampling
- Green or dry weight equations?
 - “Historical” sources
 - Use current cordwood/pulpwood eqns.
 - FIA is developing new taper and volume equations
 - multiply by wood density to get rough weight...

Cruising Without Volume Equations

- Importance Sampling
 - Centroid Sampling
 - Critical Height Sampling
 - Pressler's Method
-
- All require a dendrometer (relascope, digital relascope, optical calipers)

Conclusions

- Biomass will matter
- Prices will be higher
- Biological supply is ample
- *Available supply* will be limiting
 - supply picture hinges on attitudes, ownership, harvesting restrictions
 - social science, not just growth and yield!
- Tactical inventory situation will improve