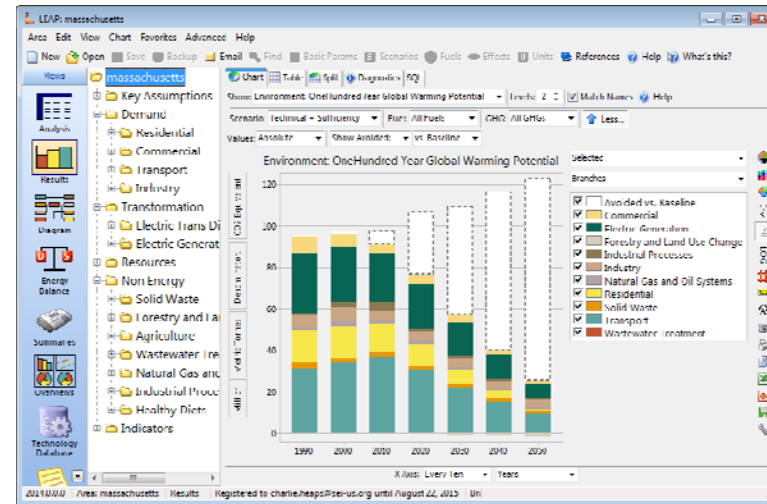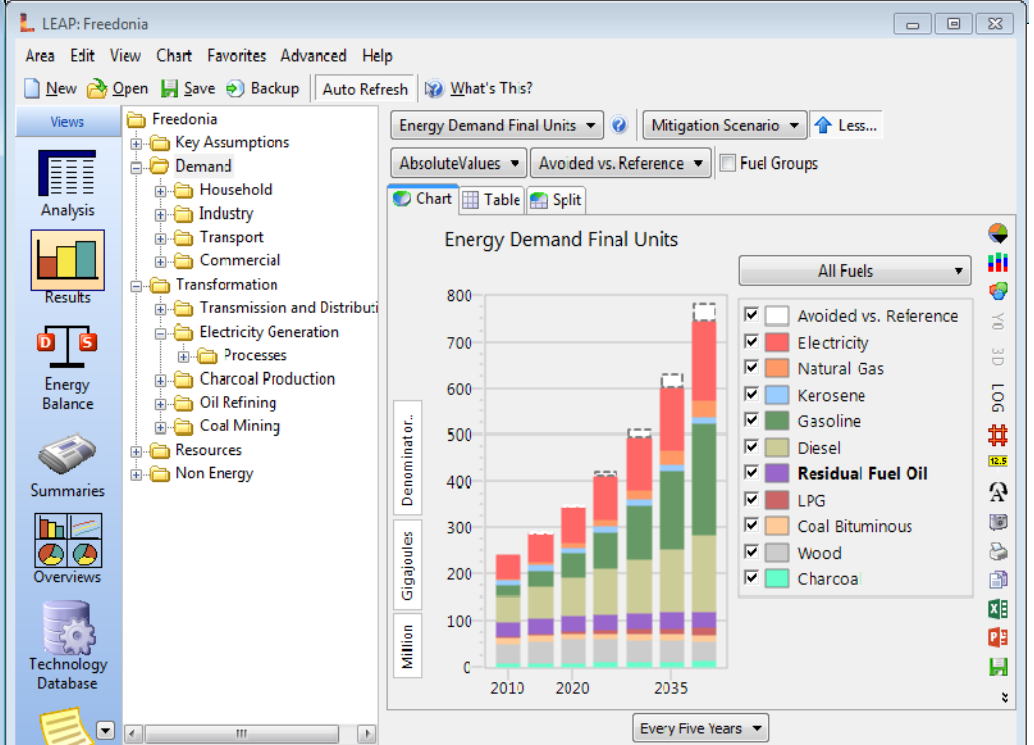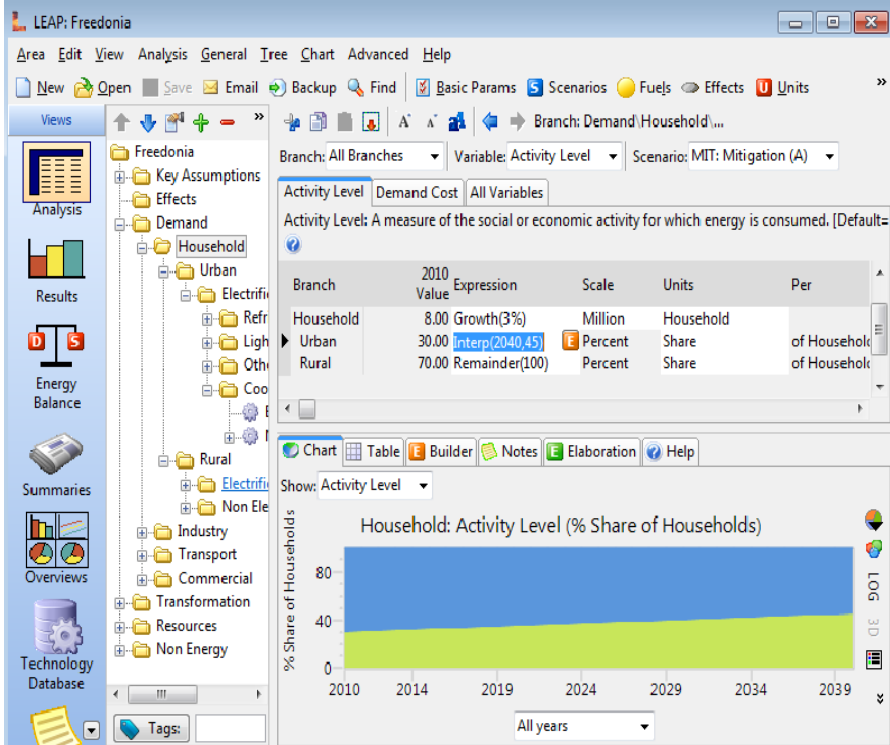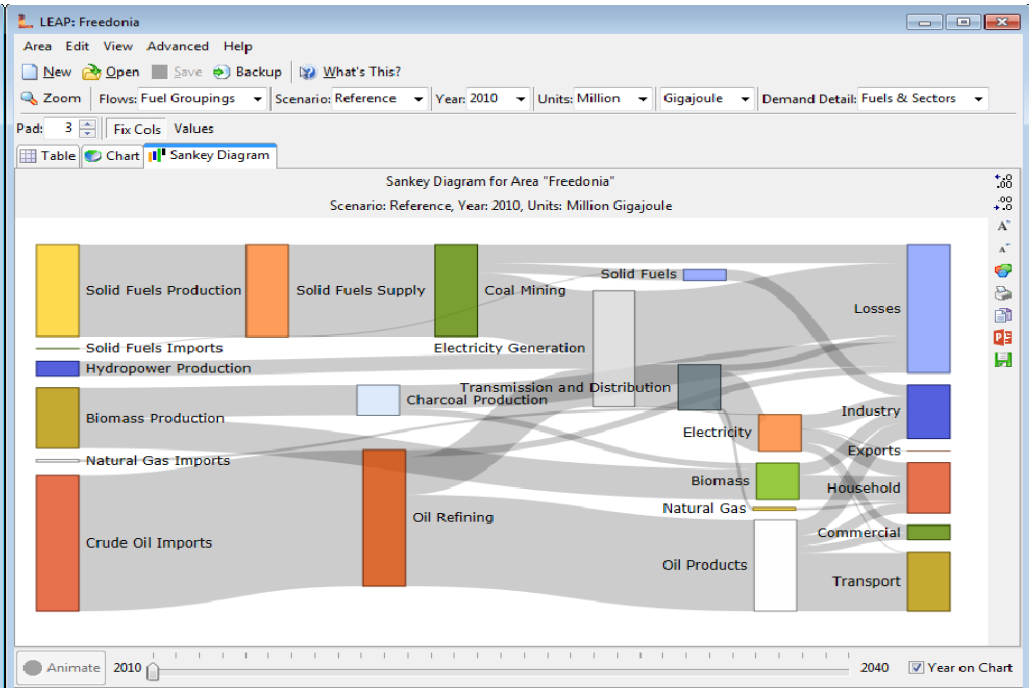# Long-range Energy Alternatives Planning System

- Graphical, scenario-based modeling software for energy planning and GHG mitigation assessment.
- Broad scope, low initial data requirements, flexible data needs, powerful results visualization.
- Not a model: a decision support tool for creating models of different energy systems.
- Supports multiple methodologies including engineering and econometric simulation and optimization using OSeMOSYS.
- Widely used in developing countries for energy planning, low emission development strategies, INDC preparation and planning of SLCPs.
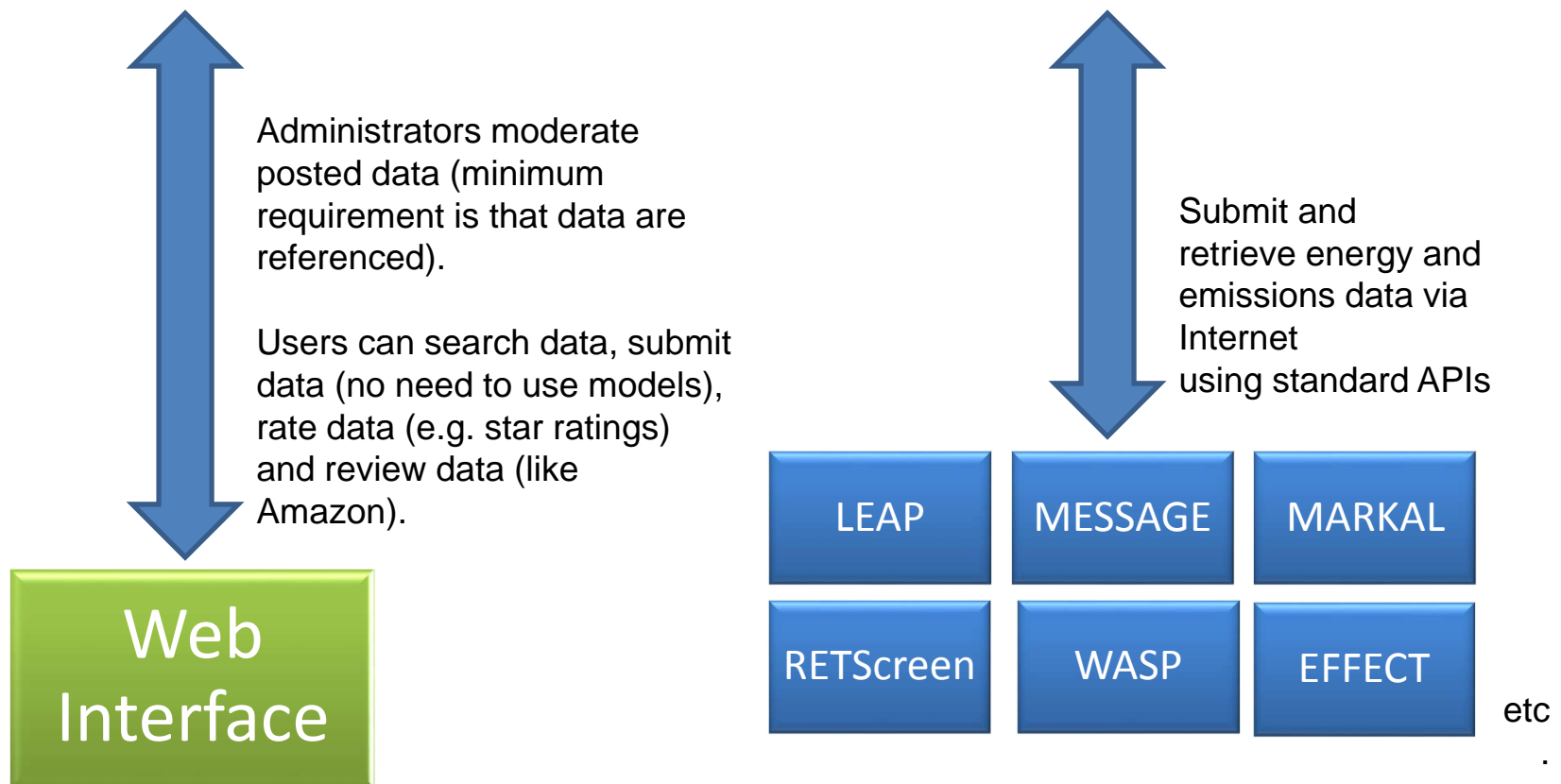- Thousands of users in 190 countries.

- API and links to Office. Can be used in connection with other tools (e.g. WEAP for water modeling & the CCAC SLCP toolkit).
- Useful at different scales: cities, states, countries, regions, globally.
- Long-range perspective, annual time step with seasonal/time-of-day details.

SEI STOCKHOLM ENVIRONMENT INSTITUTE

Download from www.energycommunity.org

Scenarios	Additional Scenarios	Income Growth Rate	Pop Growth Rate	Building Efficiency	Industrial Effic
Baseline	None			
Mitigation	None			

0.0   10%   0   4%   0   4%/Yr   0

Overview: Def   Manage Overviews   Scenario Explorer

Chart   Table

GHGs by Scenario

Energy Security

2050 Cumulative Costs (2050)

2000 2010 2030 205   2000 2030 2050   Baseline   Mitigation

2050 Primary Energy (2050)

2050 Generation By Scenario (2050)

Demand Fuel by Scenario (2050)

Baseline Mitigation   Baseline Mitigation   Baseline Mitigation

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Zoom   Flows: Fuel Groupings   Scenario: Reference   Year: 2010   Units: Million   Gigajoule   Demand Detail: Fuels & Sectors

Pad: 3   Fix Cols   Values

Table   Chart   Sankey Diagram

Sankey Diagram for Area "Freedonia"
Scenario: Reference, Year: 2010, Units: Million Gigajoule

Solid Fuels Production   Solid Fuels Supply   Coal Mining   Solid Fuels   Losses
Solid Fuels Imports   Electricity Generation
Hydropower Production   Transmission and Distribution
Charcoal Production   Industry
Biomass Production   Electricity   Exports
Natural Gas Imports   Biomass   Household
Natural Gas   Commercial
Crude Oil Imports   Oil Refining   Oil Products   Transport

Animate   2010   2040   Year on Chart

Views

Branch: Demand\Household\...

Branch: All Branches   Variable: Activity Level   Scenario: MIT: Mitigation (A)

Activity Level   Demand Cost   All Variables

Activity Level: A measure of the social or economic activity for which energy is consumed. [Default=

Branch	2010 Value	Expression	Scale	Units	Per
Household	8.00	Growth(3%)	Million	Household	
Urban	30.00	Interp(2040,45)	Percent	Share	of Household
Rural	70.00	Remainder(100)	Percent	Share	of Household

Analysis
Results
Energy Balance
Summaries
Overviews
Technology Database

Freedonia
  Key Assumptions
  Effects
  Demand
    Household
      Urban
        Electrifi
          Refr
          Ligh
          Oth
          Coo
      Rural
        Electrifi
        Non Ele
    Industry
    Transport
    Commercial
  Transformation
  Resources
  Non Energy

Tags:

Chart   Table   Builder   Notes   Elaboration   Help

Show: Activity Level

Household: Activity Level (% Share of Households)

80

40

% Share of Households

2010 2014 2019 2024 2029 2034 2039

All years

Views

Freedonia
  Key Assumptions
  Demand
    Household
    Industry
    Transport
    Commercial
  Transformation
    Transmission and Distributi
    Electricity Generation
      Processes
    Charcoal Production
    Oil Refining
    Coal Mining
  Resources
  Non Energy

Energy Demand Final Units   Mitigation Scenario   Less...

AbsoluteValues   Avoided vs. Reference   Fuel Groups

Chart   Table   Split

Analysis
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Energy Demand Final Units

All Fuels

800

700

600

500

400

300

200

100

0

Gigajoules   Million   Denominator

2010   2020   2035

Every Five Years

Avoided vs. Reference
Electricity
Natural Gas
Kerosene
Gasoline
Diesel
Residual Fuel Oil
LPG
Coal Bituminous
Wood
Charcoal

Open Source, Cloud-based Environmental Technology Database
(In early development)

Administrators moderate posted data (minimum requirement is that data are referenced).

Users can search data, submit data (no need to use models), rate data (e.g. star ratings) and review data (like Amazon).

Submit and retrieve energy and emissions data via Internet using standard APIs

Web Interface

LEAP	MESSAGE	MARKAL
RETScreen	WASP	EFFECT

etc.

To Be (Open Source) or Not to Be..

- Developed by SEI over more than 30 years, Disseminated for free to developing country NGOs, Govts and academics. Sold to other private sector with funds used to provide support and development to those with free licenses.

- LEAP data sets are transparent and easily shared. National data sets based on IEA, IPCC, UN and World Bank data developed for 105+ countries and made available for free to users.

- LEAP is not currently open source, but SEI interested in exploring this. To date few users of LEAP have expressed a need for this, perhaps in part because LEAP already has a fairly powerful API that allows it to connect to other tools. Few LEAP users are expert modelers or coders.

- Would like this group's insights on questions such as:
  - Why move to open source?
  - Any experiences of moving from closed source to open source model.
  - LEAP is developed using Delphi, which is no longer as popular as it used to be. Is this an issue for open sourcing?
  - It also relies on many commercial components (e.g. maps, charts), that themselves are not open source. Is this an issue?
  - Any suggestions for compensating for lost revenue through open sourcing?
  - If we open source, which licensing model would be most suitable?