Future Electrical Needs Workshop

Gainesville City Commission
March 10, 2004

GRU
More than Energy

Strategic Planning Department Key Staff

- Ed Regan – AGM for Strategic Planning
- David Richardson – System Planning Director
- Heidi Lannon – Managing Utility Analyst
- Todd Kamhoot – Utility Analyst
- Roger Westphal – Senior Engineer
- Mark Spiller – Utility Analyst

Community Workshops

- Community Dialogue Workshops (6)
- Alachua Co. Community Planning Group (3)
- Alachua County Environmental Protection Advisory Committee (EPAC)
- Joint EPAC/Air Quality Commission Meeting
- University Faculty and Students (3)
- Homeowners Associations (4)
- Professional Organizations (3)
- Civic Groups (5)
- Other local Governmental Groups (12)

City Commission Meetings and Workshops

Meetings

- December 15, 2003
- February 9, 2004

Workshops

- Future Electric Needs, March 10, 2004
- Renewable Energy, March 22, 2004
- Energy Conservation, April 19, 2004

Energy Planning Objectives

- Assure Reliable Electrical Supplies
- Conserve Natural Resources
- Reduce Total Air Emissions
- Reduce Carbon Intensity
- Keep Electrical Costs Affordable
- Enhance the Local Economy

GRU’s Annual Electric Forecast

- Use of Forecast
- Forecast Updated Annually
- Forecast Complete in May

Load and Energy Forecast

- Population and Income are drivers
  - Bureau of Economic and Business Research (BEBR) Forecast is used as basis
  - Professor Stan Smith, Director of Florida Population Studies Program, BEBR
- GRU part of Peninsular Florida Transmission Grid
  - PSC considers Statewide Generation and Transmission
  - Michael Haff, Florida Public Service Commission

Citizen Presentations

- Dian Deevey
- Adrienne Burges, President, Commercial Utility Econometrics
- Public Comment

Electric System Forecast

- Overview of Methodology
- Forecast Inputs: Assumptions and Data Sources
- Customer Forecast Models
- Energy Sales Forecast Models
- Forecast of Net Energy for Load and Peak Demands
- Results and Comparisons with Previous Forecasts

Overview of Methodology

- Historical Billing Data
- Economic and Demographic Indicators
- System Sales
- Net Energy for Load (NEL)
- Seasonal Peak Demands

Forecasts are developed for each of these categories:

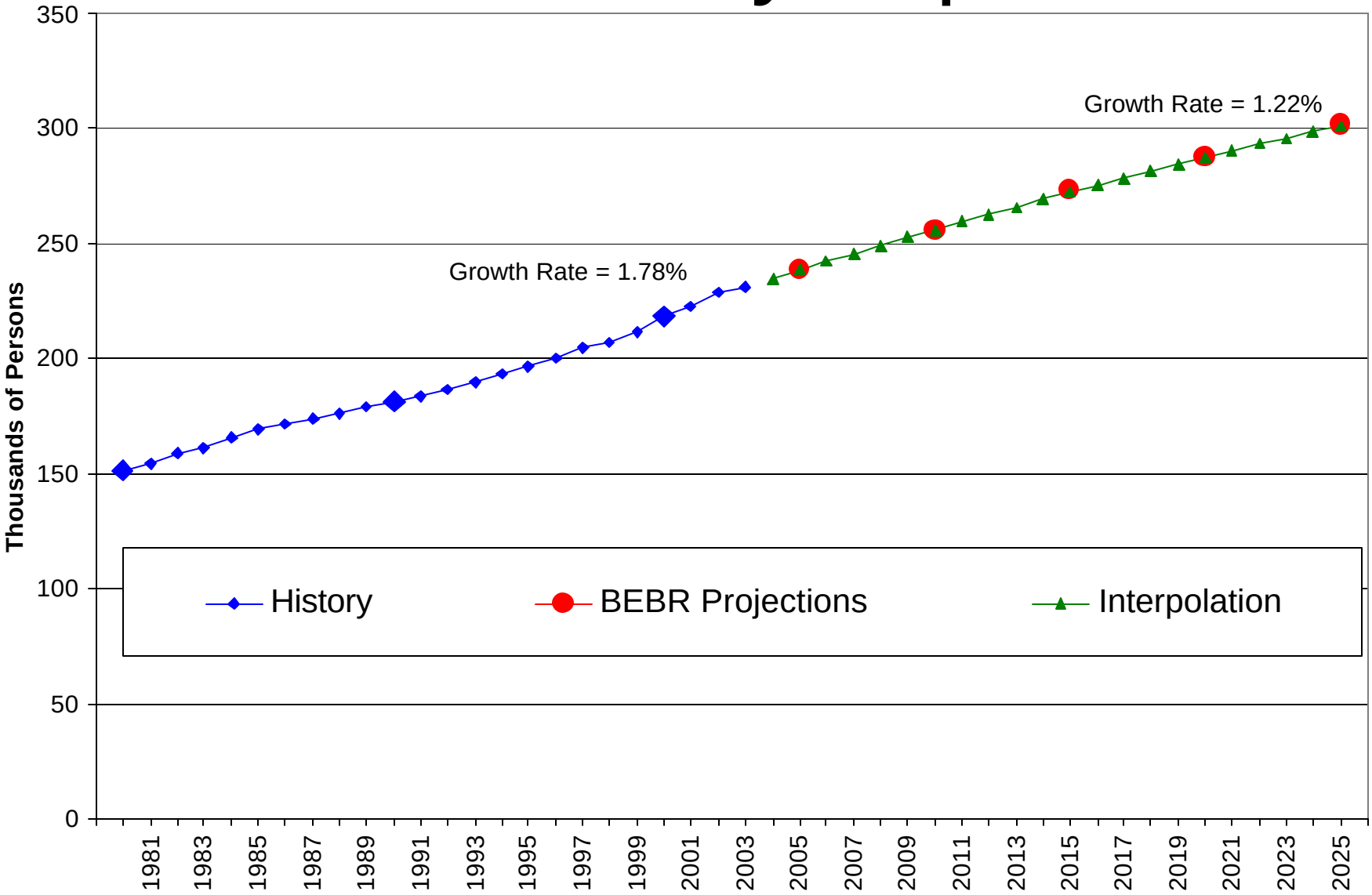
Customer Rate Class	**% of Sales**	**Customers**
Residential	44%	74,456
General Service Non-Demand	10%	7,933
General Service Demand	28%	1,026
Large Power	9%	19
Lighting	1%	2,966
Clay	3%	2,000 *
Alachua	5%	3,000 *
Total	100%	91,400

* Estimated number of customers served by Clay and Alachua from GRU

Assumptions and Data Sources

- **Alachua County Population** -- Historical estimates and projections of Alachua County population are provided by the Bureau of Economic and Business Research at the University of Florida. The most recent projections from BEBR's Population Program - *Florida Population Studies*, were released in February 2004.

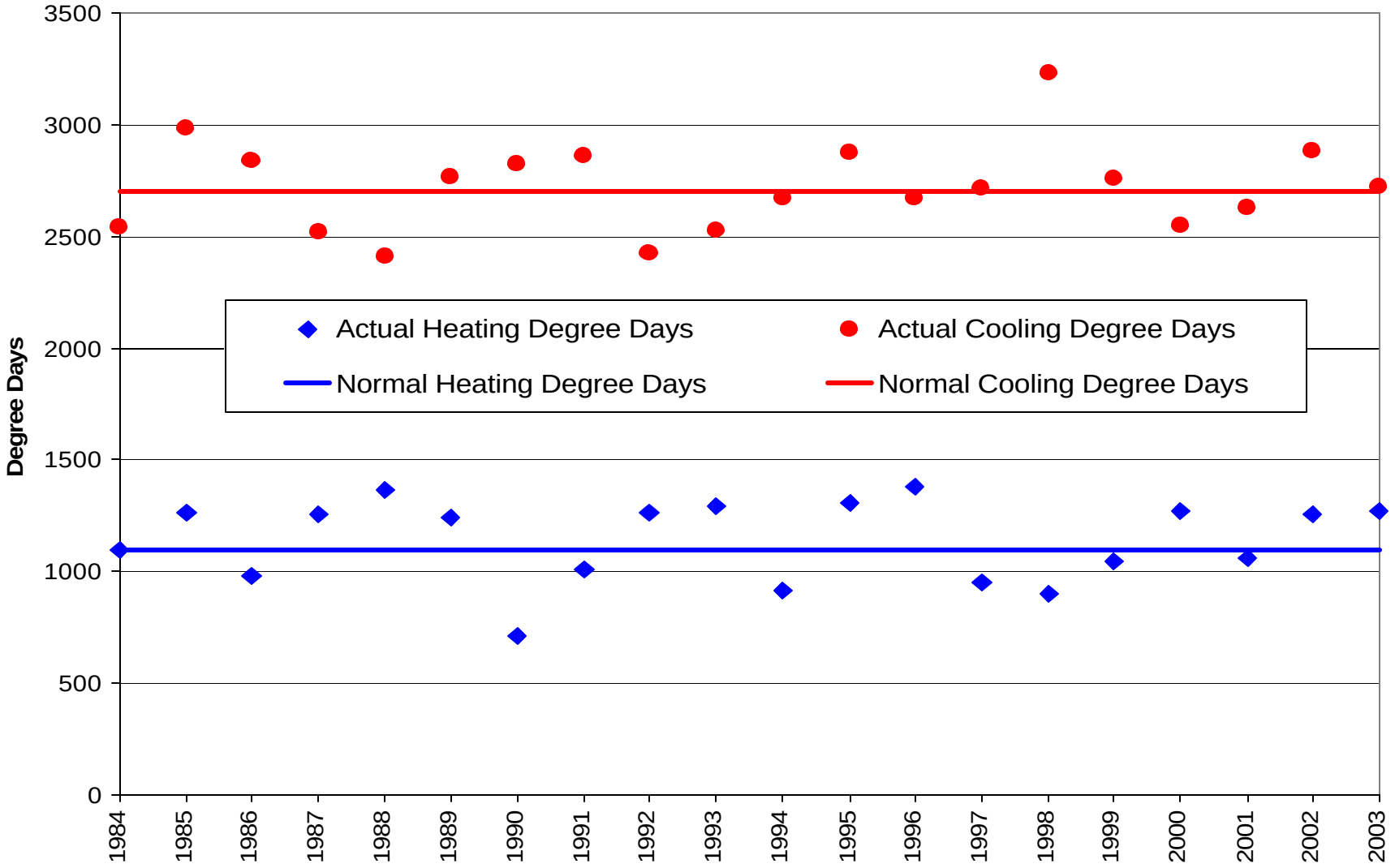
Alachua County Population



Assumptions and Data Sources, continued

- **Normal Weather Conditions** are assumed for the forecast. Historical weather data is compiled from the Flight Service Station at the Gainesville Municipal Airport, which is recorded for NOAA. We have historical daily data from 1984 through 2003. Normal Heating Degree Days and Cooling Degree Days represent the average of monthly values from the historical period.

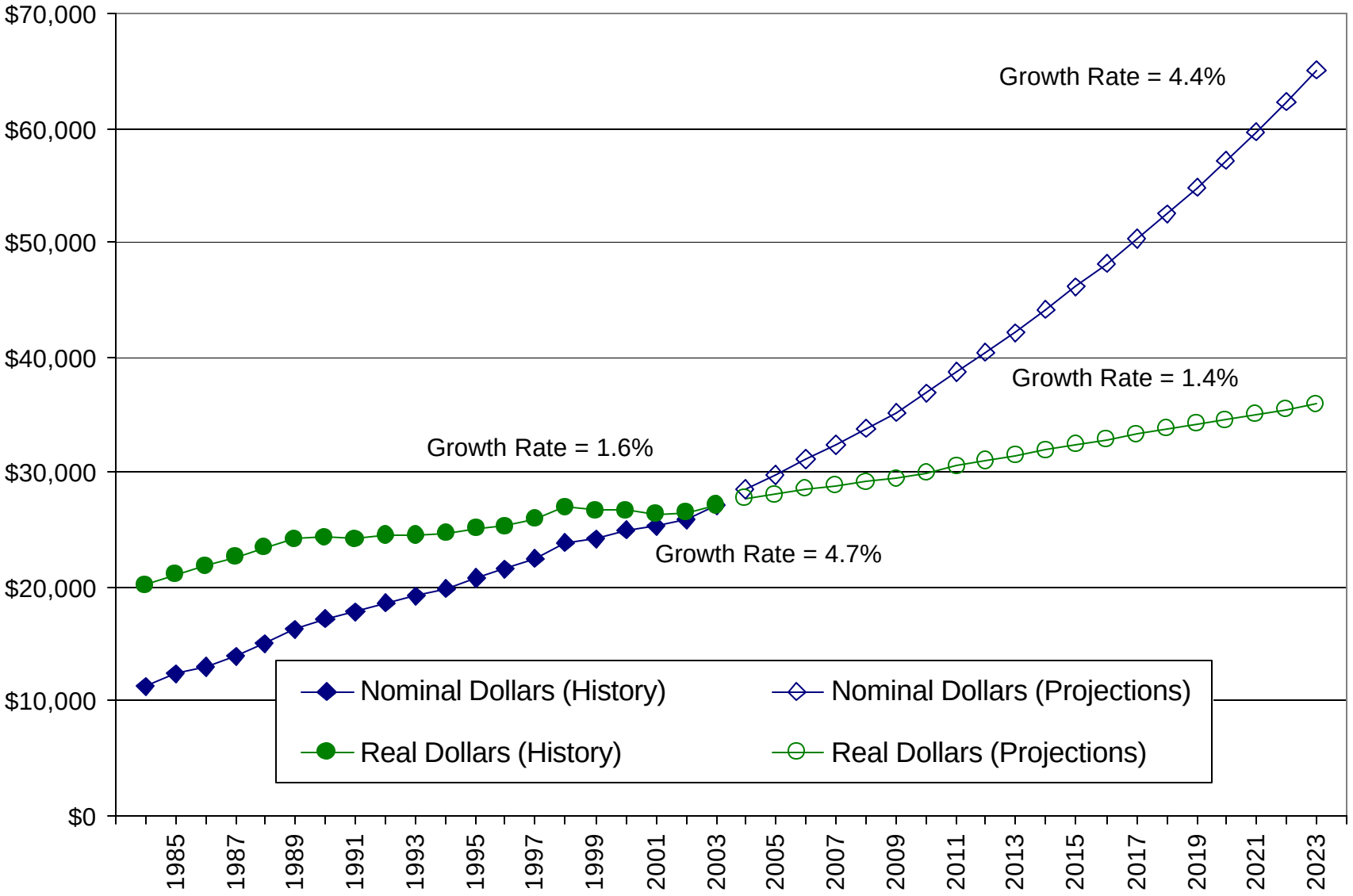
Gainesville Weather Data



Assumptions and Data Sources, continued

- **Alachua County Income** (Total and Per Capita)
- The U.S. Department of Commerce provides historical estimates of income. Forecasts were provided by BEBR in the *Florida Long-Term Economic Forecast for 2002*.
- Incomes are adjusted for inflation. Our long-term inflation assumption is 3% per year.

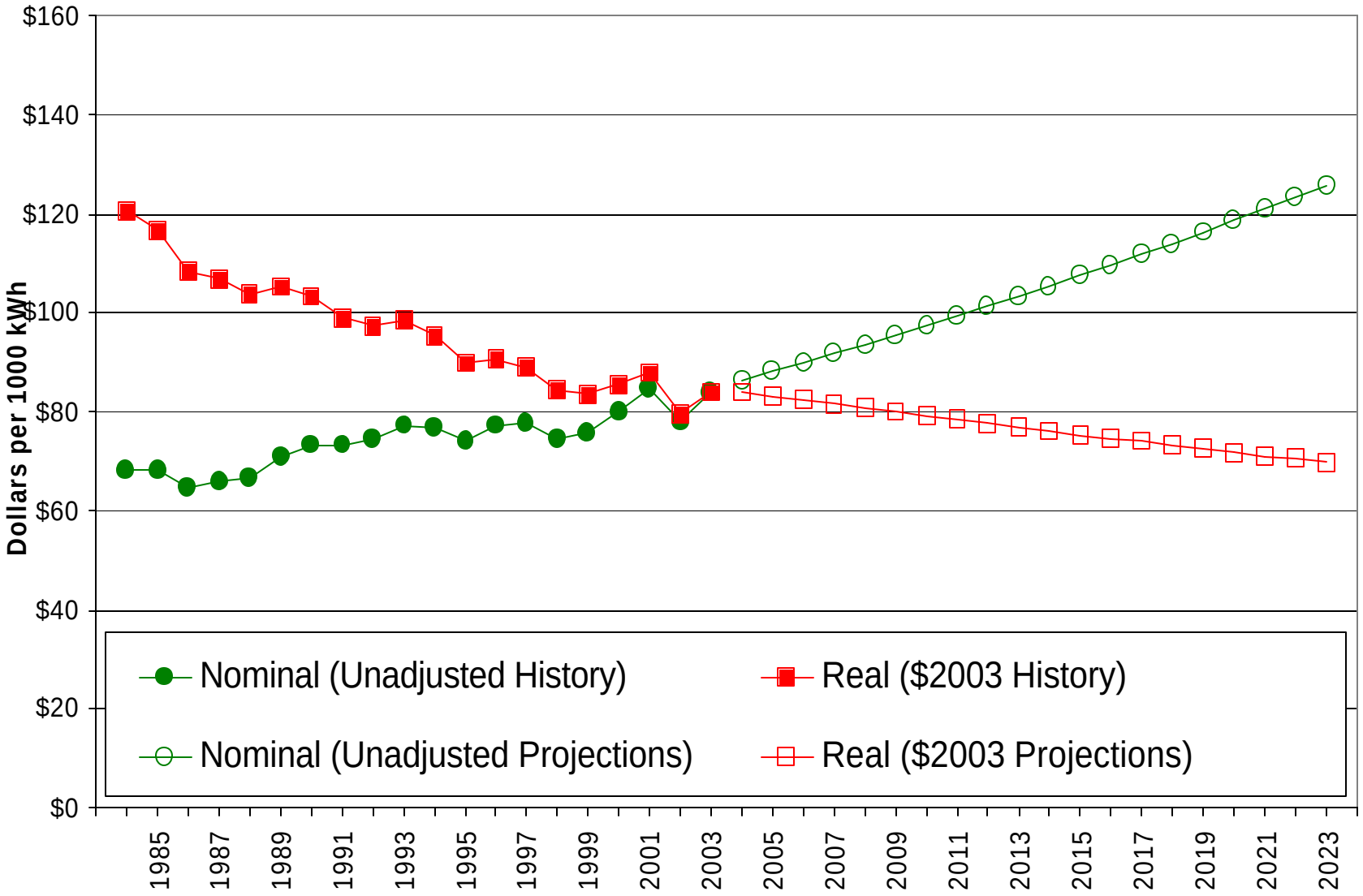
Per Capita Income



Assumptions and Data Sources, continued

- **Price of Electricity** -- billing data is the source for historical prices of electricity for each rate class. We use our financial model (which evaluates projected revenue and revenue requirements to determine revenue sufficiency) to project electric prices. Most of the projected increase in electric prices is the result of increased fuel costs.

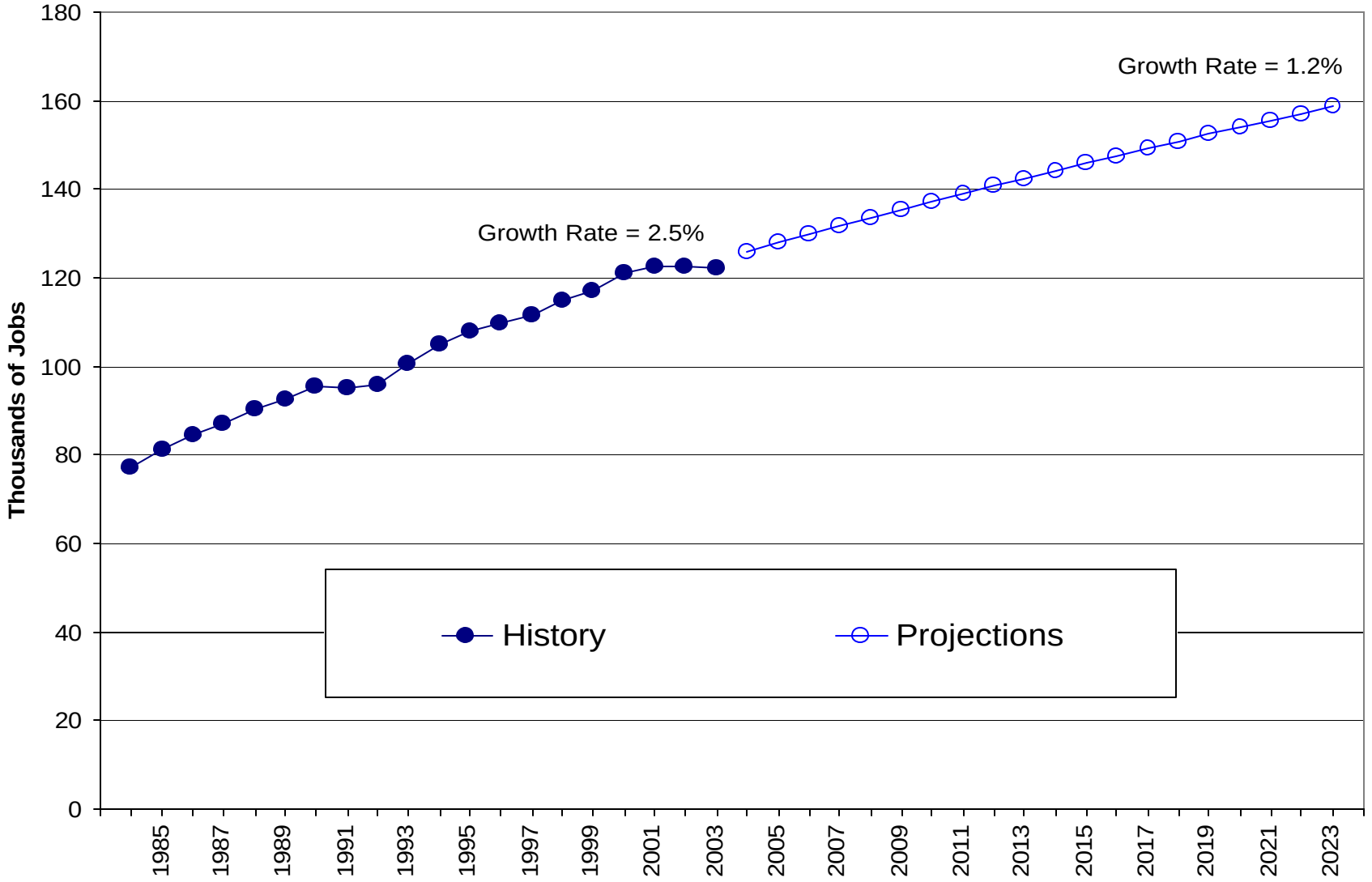
Residential Electric Prices



Assumptions and Data Sources, continued

- **Non-Agricultural Employment**
- Historical estimates of non-agricultural employment were provided by the Florida Agency for Workforce Innovation, Labor Market Statistics, in cooperation with the U.S. Department of Labor, Bureau of Labor Statistics
- BEBR provided projections of non-agricultural employment in the *Long-Term Economic Forecast*

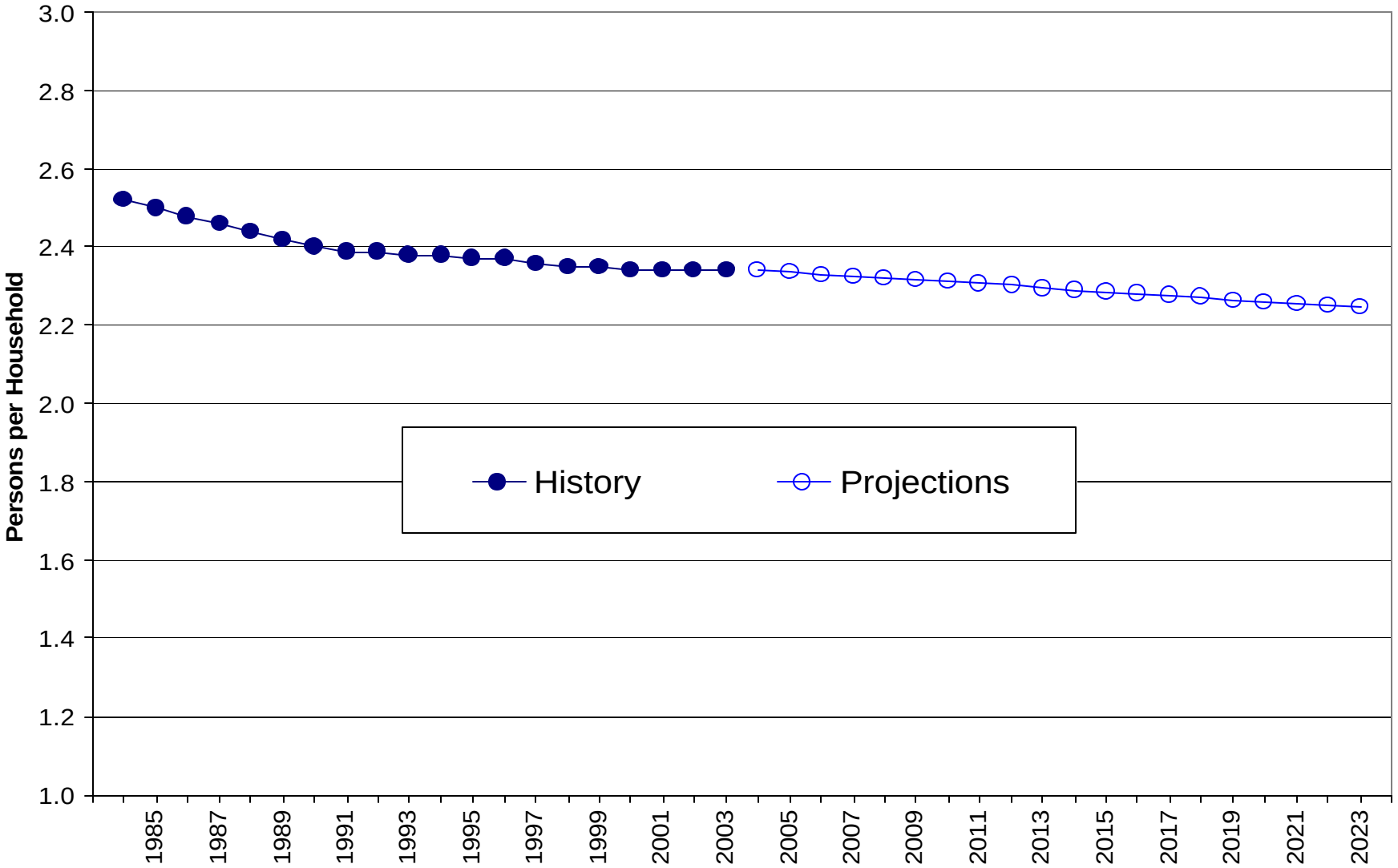
Alachua County Non-Agricultural Employment



Assumptions and Data Sources, continued

- **Average Household Size**
- BEBR provides historical estimates of the number of persons per household in Alachua County as part of its *Florida Population Studies* program. The most recent estimates were published in January 2004
- BEBR provided projections of average household size in the *Long-Term Economic Forecast*

Average Household Size



Assumptions and Data Sources, continued

- **Impacts from Conservation Programs**

- A forecast of the energy and demand reductions resulting from utility sponsored conservation programs is incorporated into our forecast of NEL and seasonal peak demands. As historically implemented measures mature, their benefits are removed from the estimated energy and demand savings.

Conservation Programs

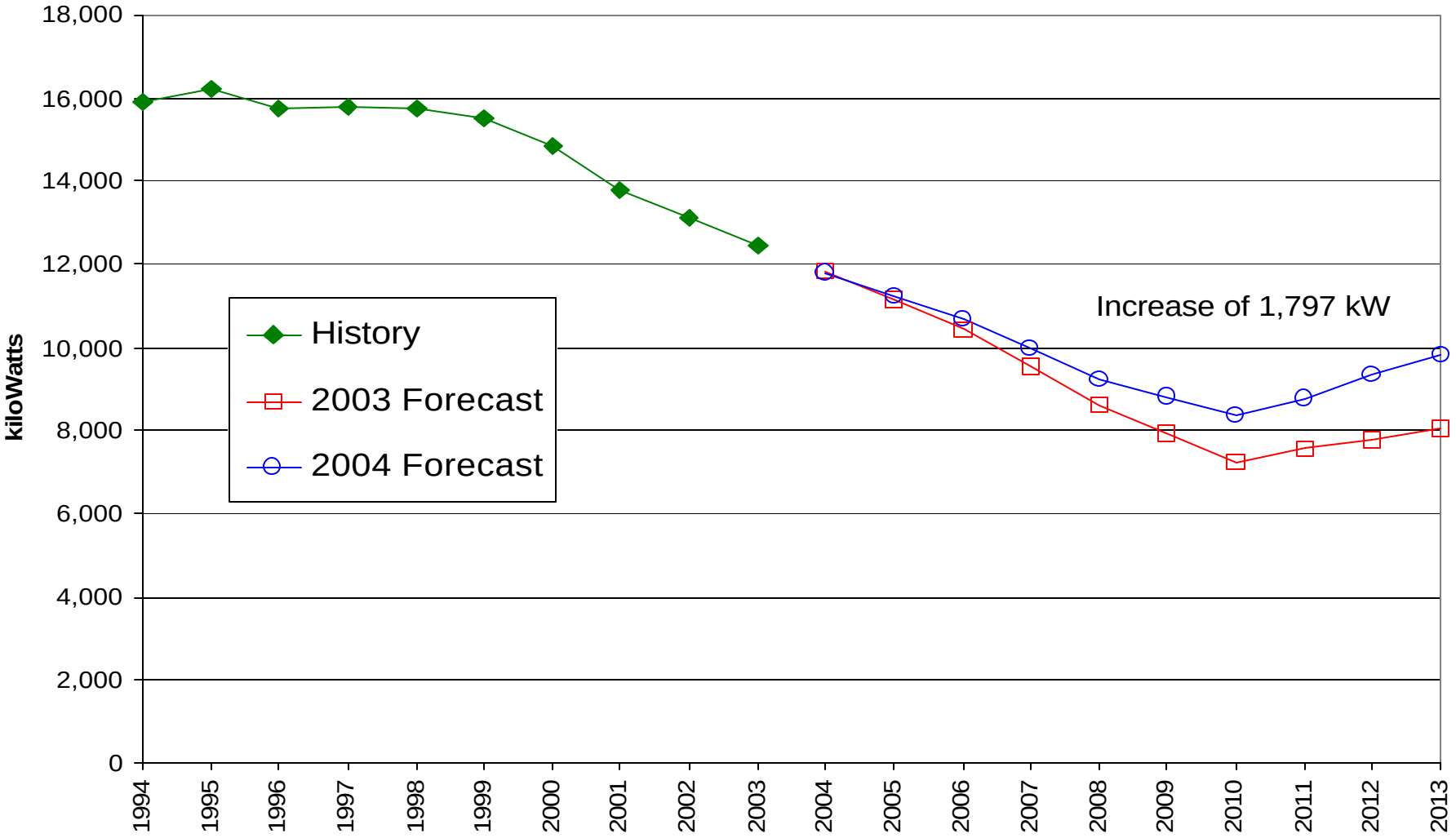
Current Residential Programs	Life-Cycle
Conservation Surveys	15
Self-Audit Materials	15
New Construction Consultation	30
Green Building Program	30
Customer Consultation	5
Low-Income Weatherization (FL Fix)	15
Solar Water Heating Rebates	20
Solar Electric Interconnection and Buyback	30
Gas Water Heating Rebate	30
Gas Space Heating Rebate	30
Gas Range Rebate	15
Gas Dryer Rebate	15
Gas New Construction Rebate	30

Current Commercial Programs	Life-Cycle
Conservation Surveys	15
Commercial Lighting Service	15
Solar Water Heating Rebates	20
Solar Electric Interconnection and Buyback	30
Gas Air Conditioning Rebate	20
Gas Dehumidification Rebate	20
Gas Water Heating Rebate	10

Proposed Residential Programs	
Heat Recovery Unit Rebate	15
Duct Leak Pilot Project	15
Central A/C Rebate	15
Room A/C Rebate	10
Duct Repair Rebate	15
Heat Pipe Rebate	15
Reflective Roof Coating Rebate	10

Proposed Commercial Programs	
Performance Payment Incentive	15
Thermal Storage Rebate	20
Heat Recovery Unit Rebate	15
Window Shade Rebate	10

Impact of Conservation Programs on Summer Peak Demand Total Annual Effects



Customer Forecast Models

- Residential Customers: f(Alachua County Population)
- GSND Customers: f(Alachua County Population)
- GSD Customers: f(Alachua County Population)
- Large Power Customers: held constant with additions handled individually. Currently 18 customers.

Energy Sales Forecasts

- Residential Average Annual Usage per Customer: f(household income, electricity price, heating degree days and cooling degree days)
- GSND Average Annual Usage per Customer: f(number of optional GSD customers and cooling degree days)
- GSD Average Annual Usage per Customer: f(per capita income and number of optional GSD customers)

Energy Sales Forecasts, continued

- Large Power Average Annual Usage per Customer: f(non-agricultural employment and price of electricity)
- Lighting Energy Sales: f(number of residential customers)
- Sales to Clay Electric Cooperative's Farnsworth Substation: f(total county income)
- Sales to the City of Alachua: f(City of Alachua Population)

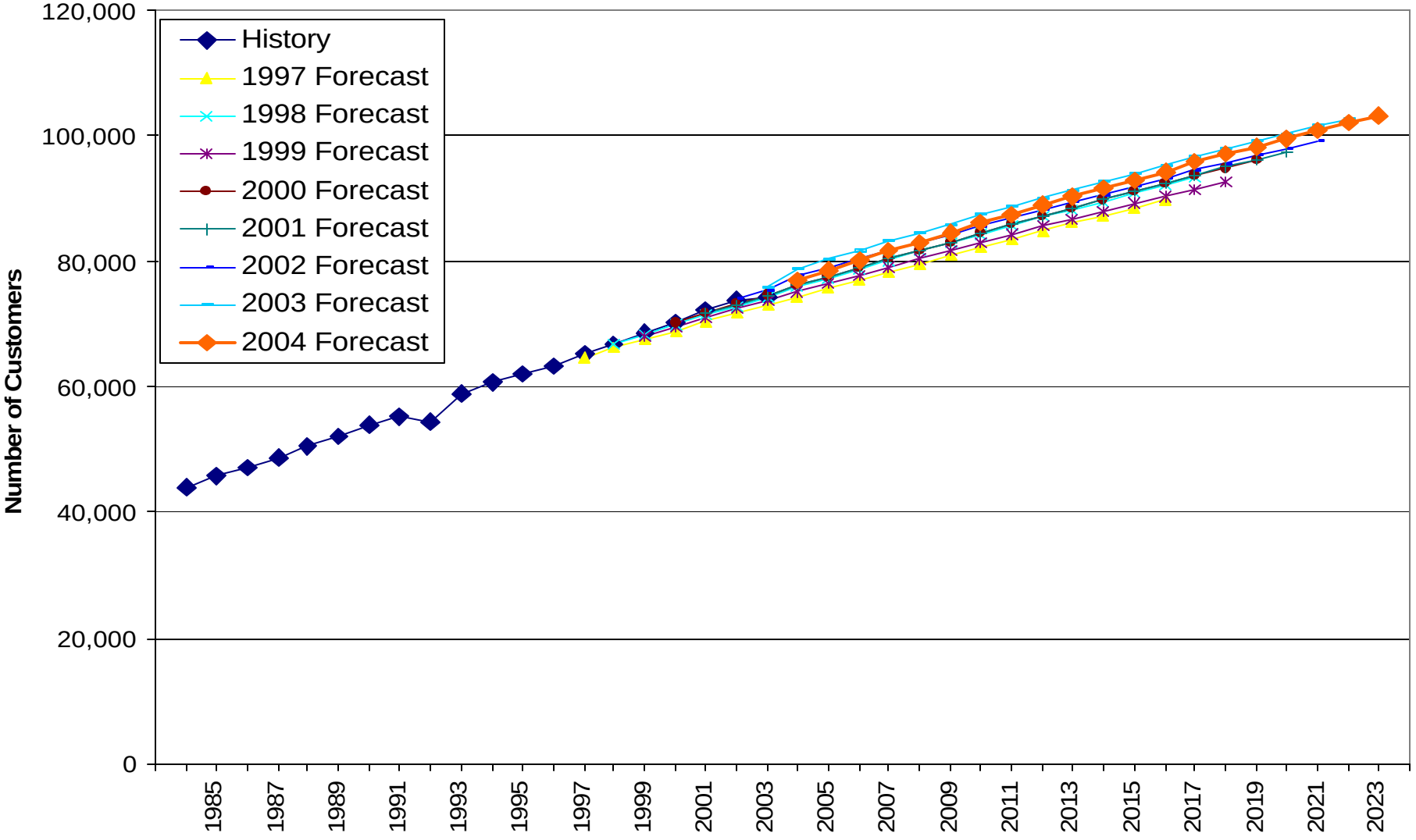
Forecast of NEL and Seasonal Peak Demands

- Net Energy for Load: f(total energy sales plus an estimate for losses of about 5%)
- Winter Peak Demand: f(expected January energy and an expected January load factor)
- Summer Peak Demand: f(expected July energy and an expected July load factor)

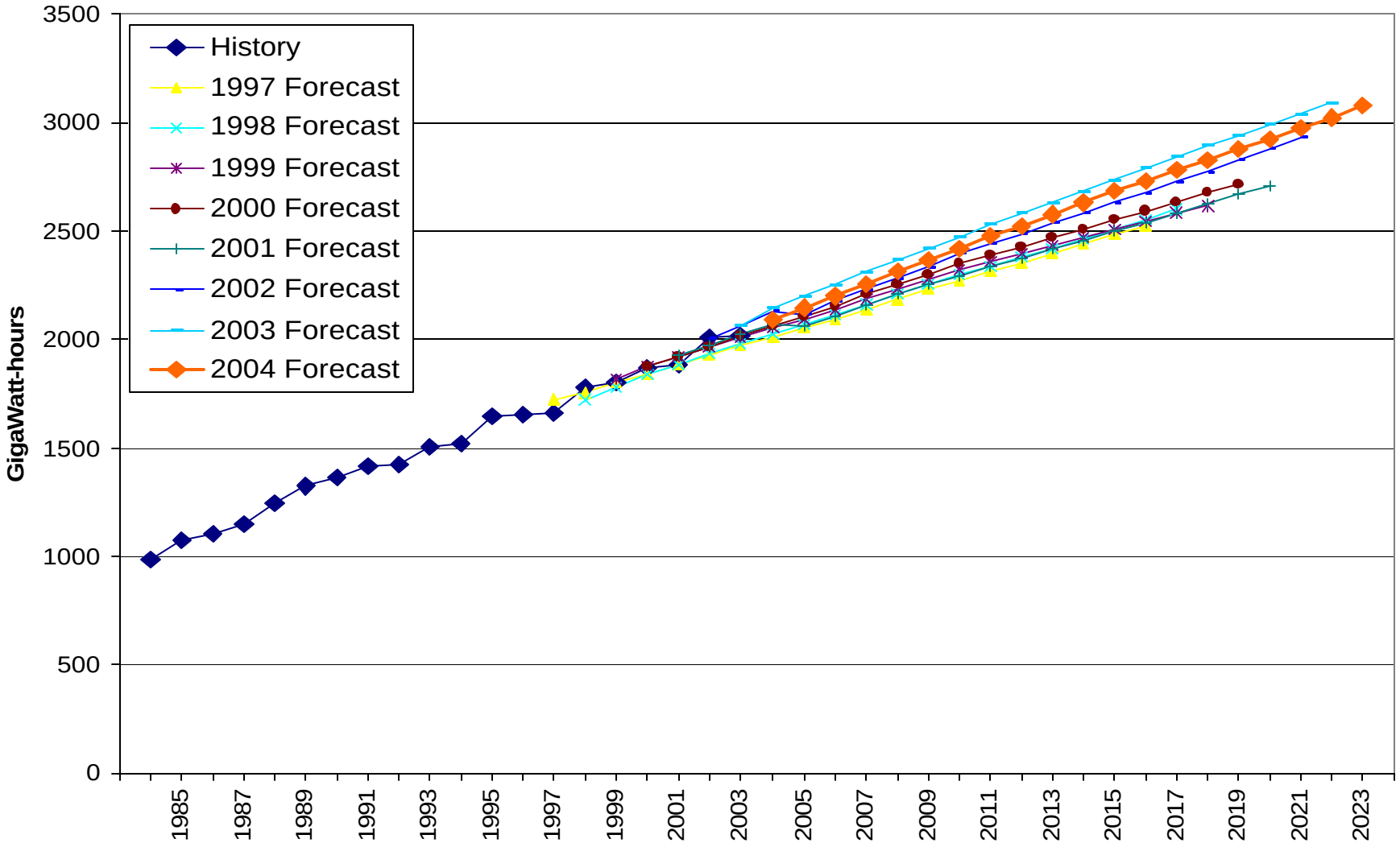
Results and Comparisons with Previous Forecasts

- Comparison of Forecasts of Number of Residential Customers from 1997-2004.
- Comparison of Forecasts of Net Energy for Load from 1997-2004.
- Comparison of Forecasts of Summer Peak Demand from 1997-2004.

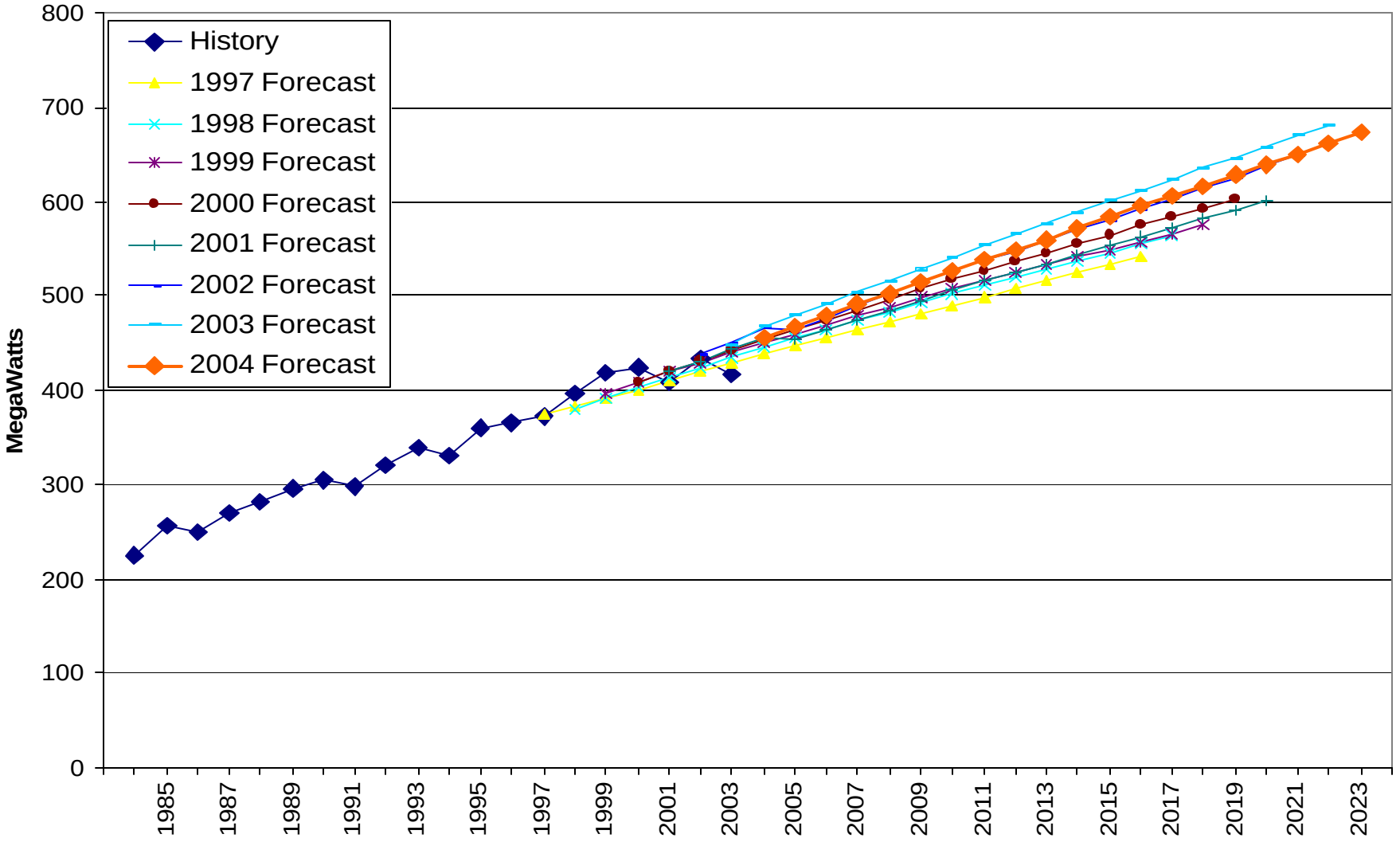
Comparison of Residential Customer Forecasts



Comparison of Net Energy for Load Forecasts



Comparison of Summer Peak Demand Forecasts



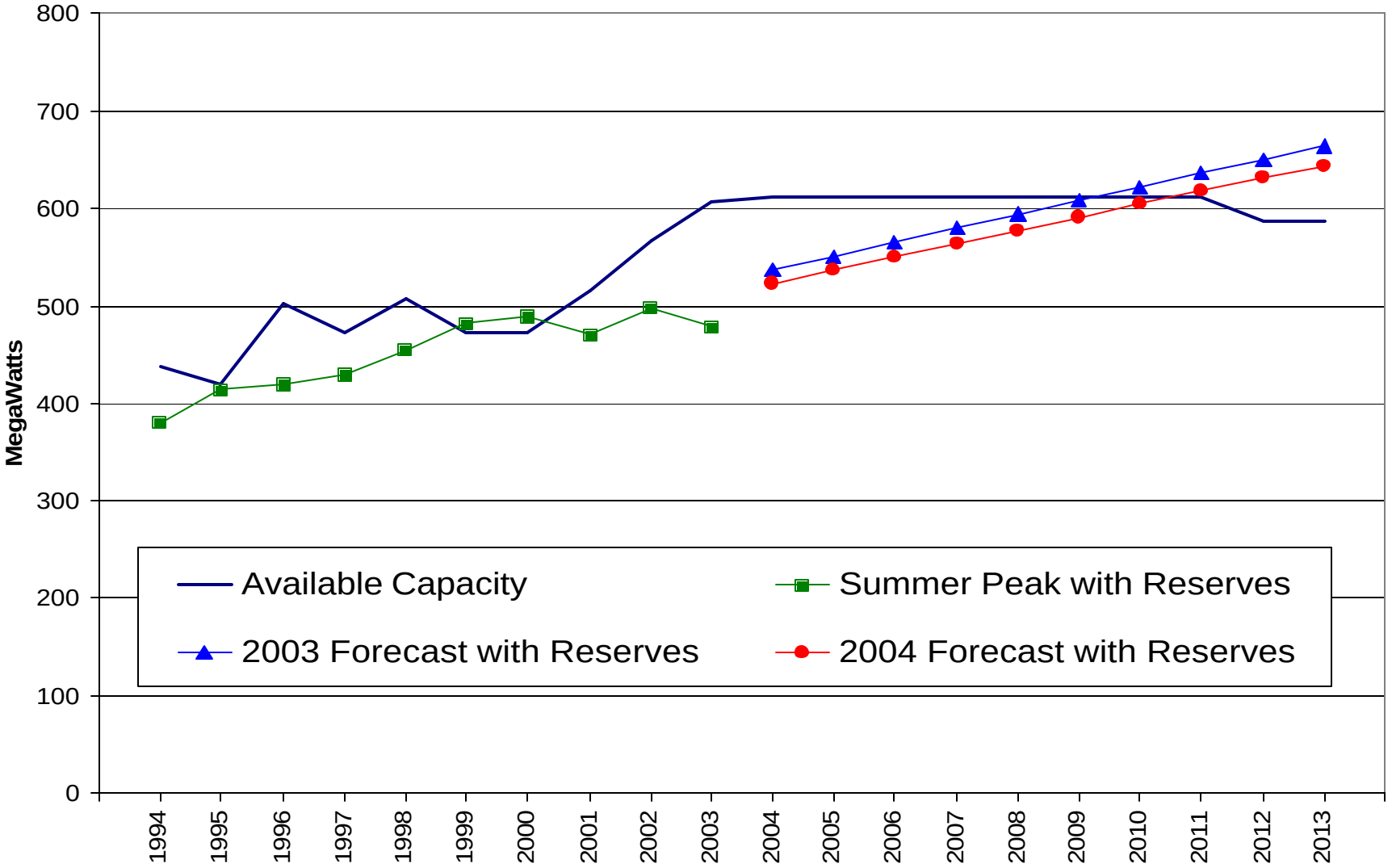
Reserve Margin

- Prudent Utility Practice
- Impacts Electric System Reliability
- Allows for Unanticipated Events
  - Extreme Weather
  - Mechanical Failures or Human Errors
    - GRU System
    - Connected Utilities

What is an Appropriate Reserve Margin?

Company	Summer Reserve Margin
Florida Power and Light	20%
Progress Energy Florida	20%
Tampa Electric Company	20%
Lakeland Electric	20%
Florida Municipal Power Agency	18%
City of Tallahassee	17%
Gainesville Regional Utilities	**15%**
JEA	15%
Orlando Utilities Commission	15%
Seminole Electric Cooperative	15%

Summer Peak Demand and Generation Capacity

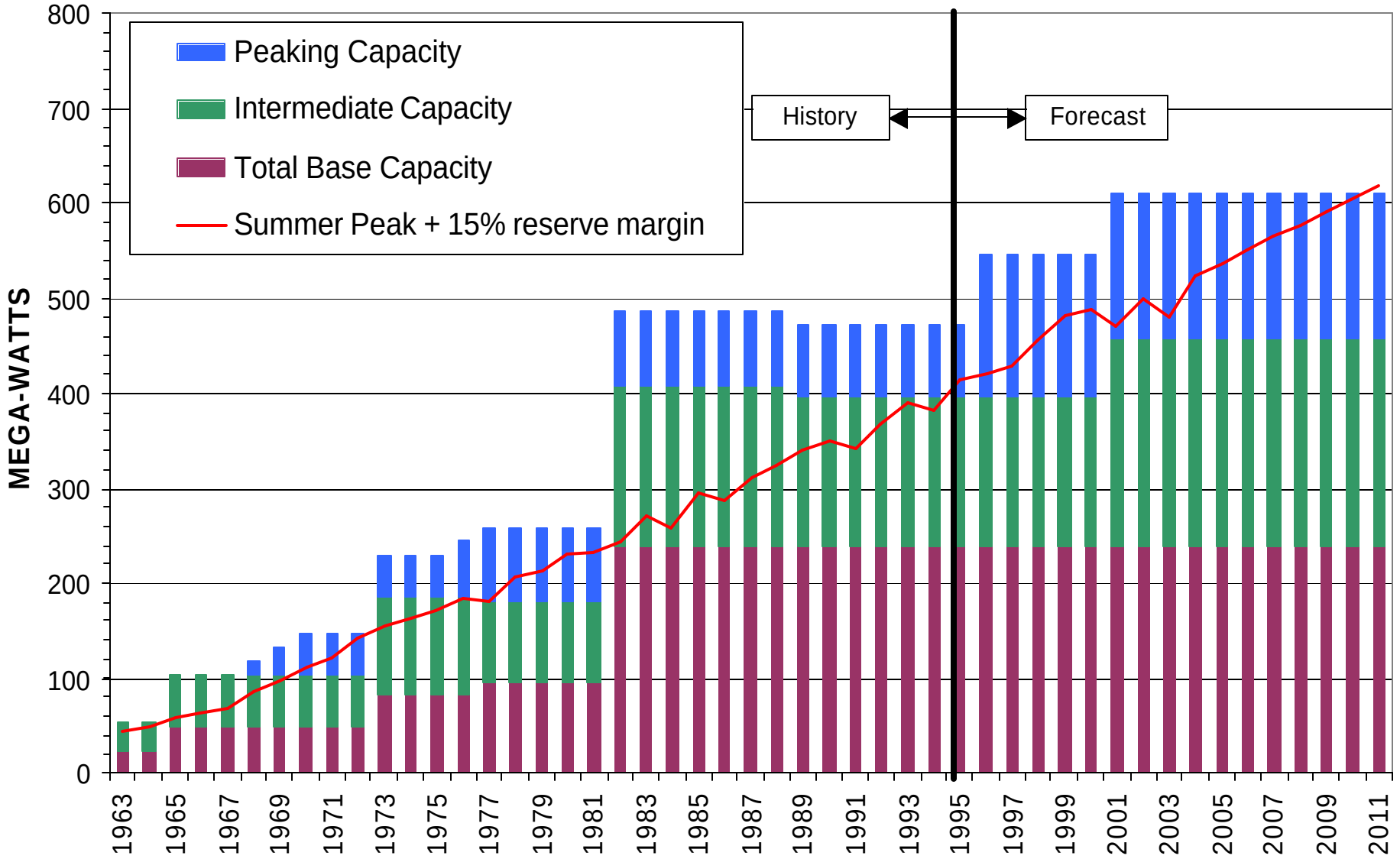


QUESTIONS ON FORECAST OR RESERVE MARGINS?

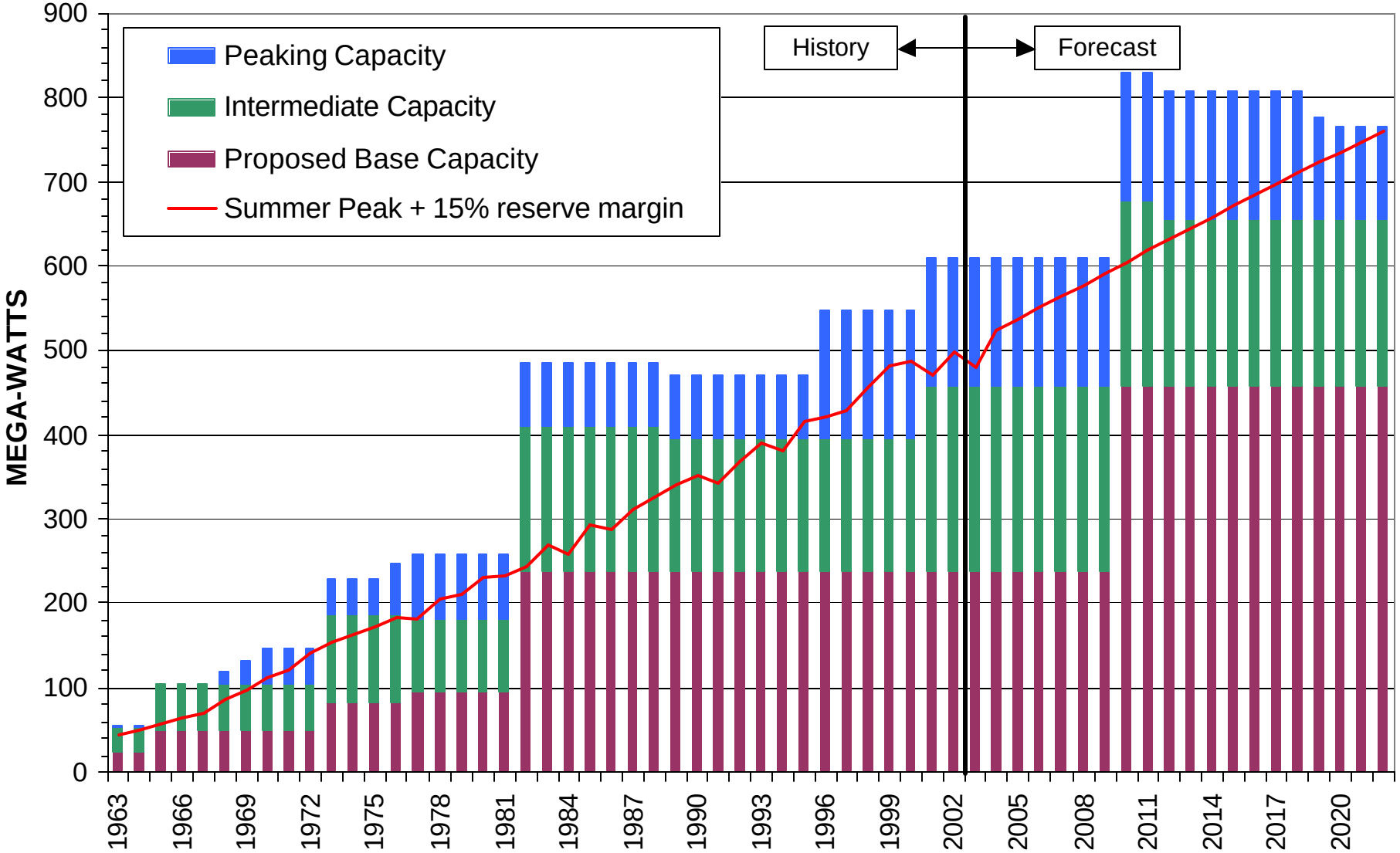
Reasons to Add Generation

- Base 2004 Load Forecast Shows Need in 2011
  - High and low band forecasts
- Environmental Benefits
  - Net reduction in sulfur dioxide, nitrogen oxides, particulate matter
  - Double the solid fuel capacity, reduce permitted emissions by more than half
- Minimize Generation Costs
  - Keep electric rates affordable
  - Cost advantages of solid fuel generation capacity

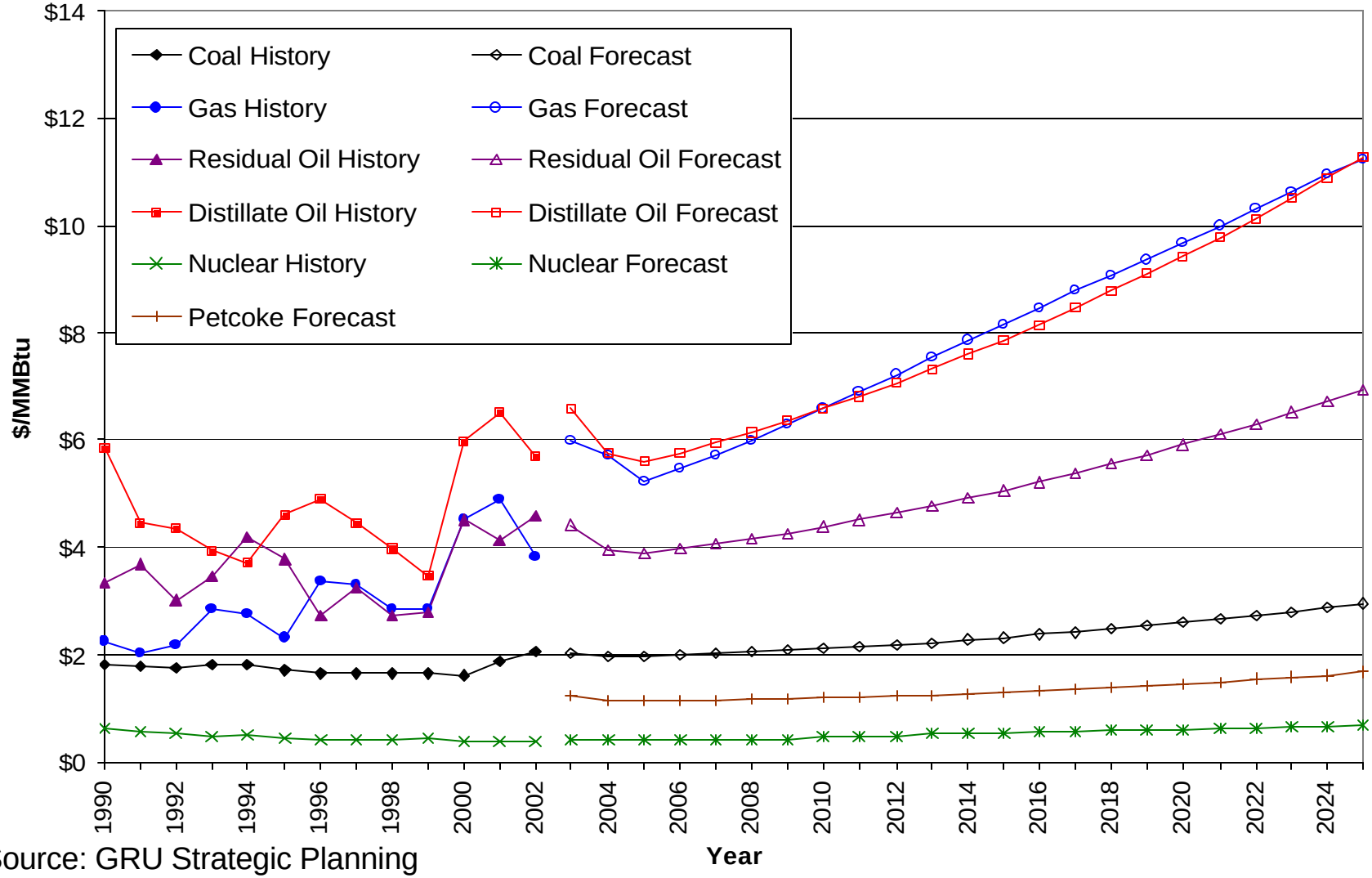
Current Capacity by Type



CFB Capacity Added In 2010



Natural Gas Prices Increasing Faster Than Other Fuels



Source: GRU Strategic Planning

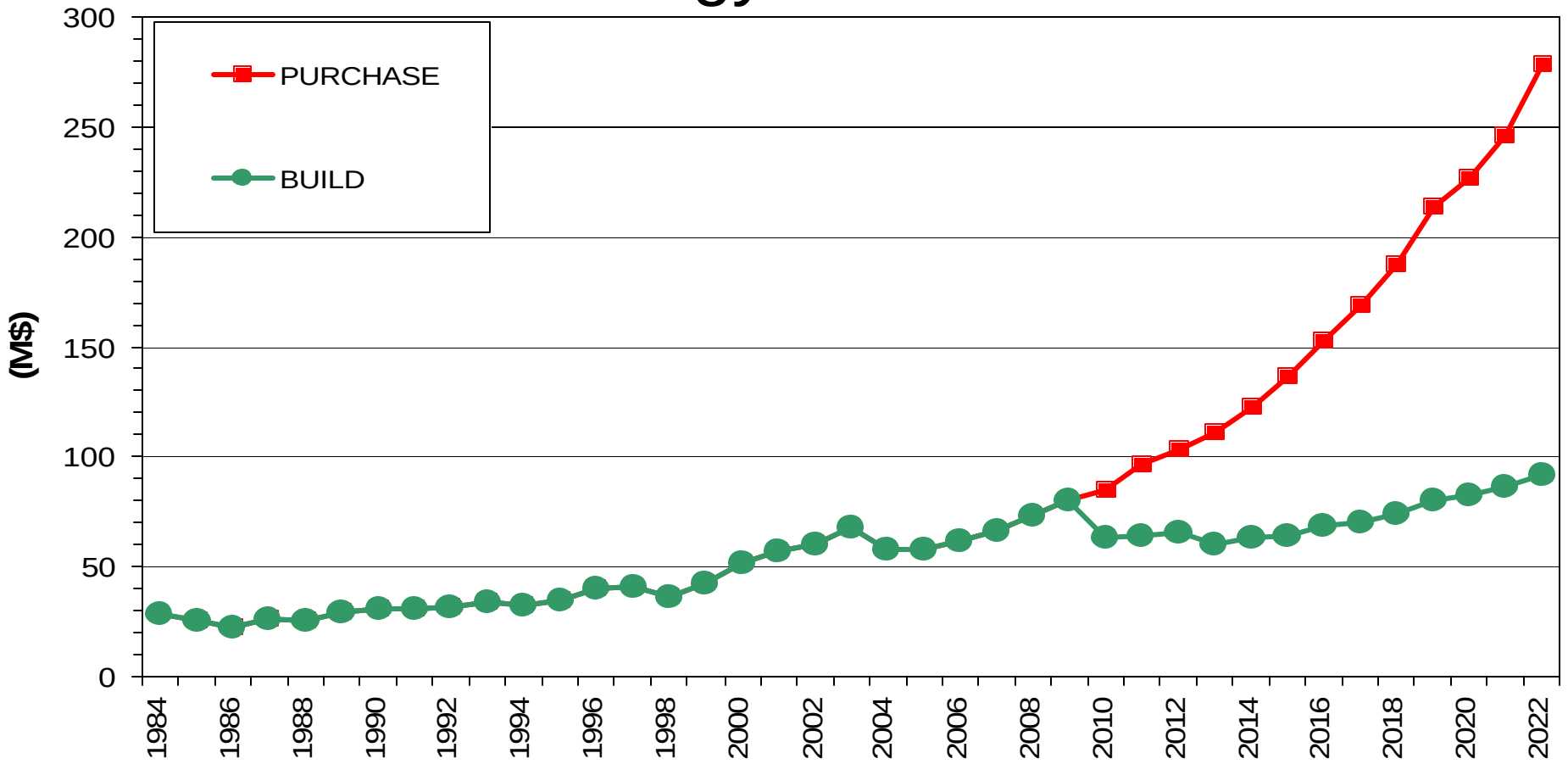
Build or Buy?

- If Build - Solid Fuel (Coal, Petroleum Coke, Biomass)

- If Buy from Others – Natural Gas

Comparison of Purchase Versus Build

Electric Energy Production Cost



Cost Savings
Build vs. Buy

Building Solid Fuel Generation is Projected to Provide Customers a Net Present Value Savings of $202 million*

* 2004 dollars

Impact of Construction in 2011 instead of 2010

- Increased Fuel or Purchased Power Costs

  $8.3 to $9.1 million

- Increased Construction Costs

  $11.3 - $21.7 million

TOTAL - $19.6 to $30.8 million

QUESTIONS ON FUEL COST SCENARIOS?