



*LoadDynamics Model
Training Workshop: Tools for DR
Evaluation*

December 2000



Agenda

- ⇒ ♦ Steps to learning to use the model
 - ♦ Methodology background
 - ♦ Tutorials
 - ♦ Hands-on work



Learning To Use The Model

- ◆ Read Section 5 that describes the analytical methodology
- ◆ Review Section 2 to become familiar with the user interface
- ◆ Do the first tutorial, Section 3, that uses the load growth trend example
- ◆ Do the second tutorial, Section 4, that uses the load assessor tool



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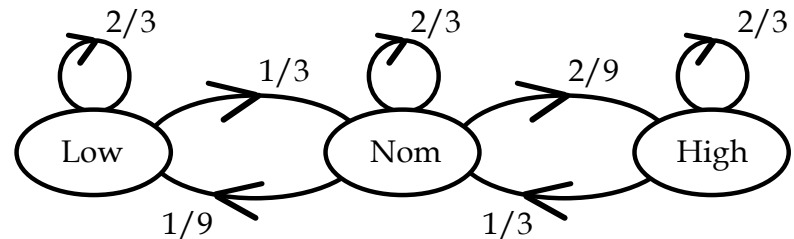
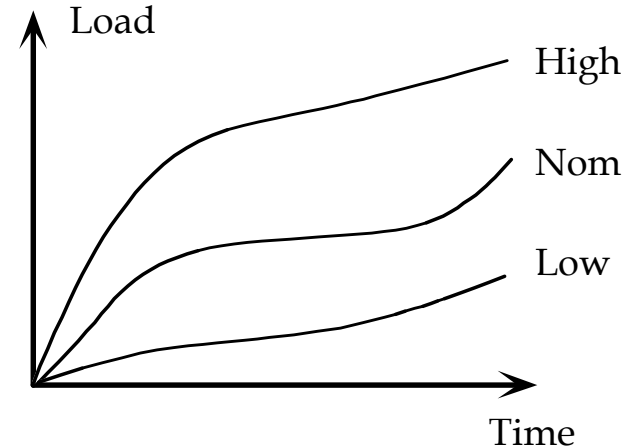


Planning Problem

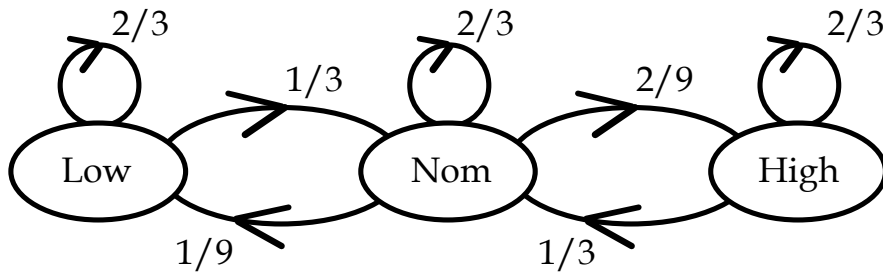
- ◆ Economic value of distribution infrastructure investments is affected by the uncertainty in future load
- ◆ Thus when planning long term capacity investment, economic evaluations must include a characterization of possible future load levels
- ◆ The question is how to build the load uncertainty information into the economic analysis

Methodology

- ◆ Technical problem:
 - Given current load there is a very large number of possible load trajectories that can result in a given future load level
 - There are many possible future load levels
 - Finding the best investment plan for an area requires some probabilistic understanding of the possible load trajectories



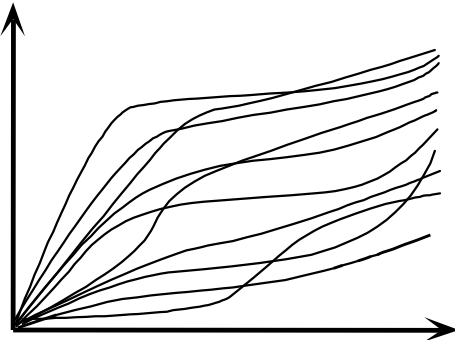
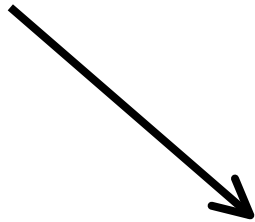
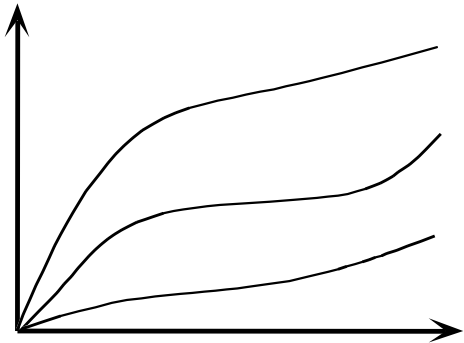
Methodology - Markov chain



- ◆ A key observation : load growth is uncertain but correlated over time
- ◆ This lead to the idea that it is useful to describe load growth in terms of trends that persist for uncertain durations
- ◆ Key questions:
 - How long does load follow a given trend?
 - When the growth trend shifts, what are the possibilities and how likely is it to follow a specific trend

To / From	Low	Nom	High
Low	2/3	1/3	0/3
Nom	1/9	2/3	2/9
High	0/9	1/3	2/3

Methodology - Reasons for technical approach



- ◆ Feasible to model literally millions of possible load trajectories
- ◆ Provides method for describing true uncertainty (regression models that extrapolate historical trends are biased)



Methodology

LoadDynamics - [Screen 5 - Calculating Load Model Parameters]

Estimate Parameters Plot Results Instructions

Local Growth Trends

Input Growth Rate	Calc. Growth Rate (%/yr)	From Trend	Transition Probabilities		
			To Trend 1	2	3
0	0.	1	0.5	0.44	0.06
2.5	2.5	2	0.22	0.71	0.07
5	5.06	3	0.31	0.69	0.

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