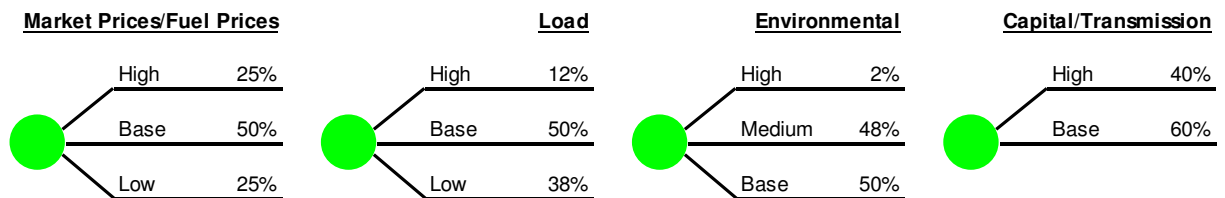


Critical Uncertain Factors and Determination of Subjective Probabilities

The decision tree representation of the critical uncertain factors and their subjective probabilities are presented below. The critical uncertain factors in the decision tree are (1) market and fuel prices, (2) load growth, (3) environmental costs and (4) capital and transmission costs. The critical uncertain factors and their subjective probabilities were reviewed by a committee of Empire's senior management who have been delegated the authority to make decisions on behalf of the Company. The Empire IRP Team consisted of members of senior management and other Empire personnel. The team members included: Brad Beecher, Vice President and COO – Electric; Greg Knapp, Vice President – Finance; Kelly Walters Vice President – Regulatory and General Services; Scott Keith, Director of Planning and Regulatory; Todd Tarter, Manager of Strategic Planning; Sherry McCormack, Planning Analyst; Aaron Doll, Planning Analyst – Associate; Carrie L. Simpson, Supply Management Specialist; Blake Mertens, Manager of Strategic Projects; and Tim Wilson, Energy Supply Planning and Operations Analyst.

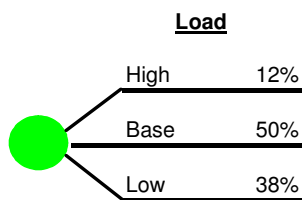


Empire and its consultants utilized industry knowledge and professional judgment to determine which uncertain variables to include in the decision-tree analysis. It is based off the work from the 2006 Resource Plan that was presented to Missouri Parties on August 25, 2006. When determining the uncertain variables to include in a decision tree, care needs to be taken to keep the tree to a manageable size since this will determine computer run times and IRP costs. Empire and its consultants were able to incorporate 10 of the 12 uncertain factors (A-L that the rule requires a utility to consider) into the analysis and still keep the number of end points at a reasonable level. This was accomplished by combining multiple uncertainties into a single node of the decision tree.

when it made sense to do so, and with the use of unit outage draws in the simulation software. The two factors that were not incorporated into the final decision tree were (1) fixed operations and maintenance costs of existing generation facilities and (2) future interest rate levels. Since both the magnitude and range of uncertainty is relatively small for annual fixed and variable operation and maintenance costs, Ventyx and Empire concluded that this was not a critical uncertain factor so it was not carried forward to risk analysis. Empire will consider future interest rate levels as a possible uncertain factor in its future IRP filings.

Subjective probabilities for the load forecast were developed by Empire based on historical customer growth levels from the 34 year period 1973-2006 as seen in the following table.

Category	Annual Customer Growth Range	Number of Occurrences	Percent	Rounded to Whole %
High	> 2.2%	4	11.76%	12%
Base	1.9% to 2.2%	17	50.00%	50%
Low	< 1.9%	13	38.24%	38%



Subjective probabilities for the market and fuel prices were developed using stochastic analysis. Ventyx ran multiple scenarios and determined which price levels occurred at each of the three end-point levels (namely the 25th, 50th and 75th percentile). Capital and Transmission probabilities were more subjective and included market knowledge and history of similar large construction projects conducted in the region. Environmental subjective probabilities were based on an analysis conducted by Ventyx (formerly Global Energy). The following section from Volume V page 26 of the IRP report describes the method.

3.1.3 Environmental Costs

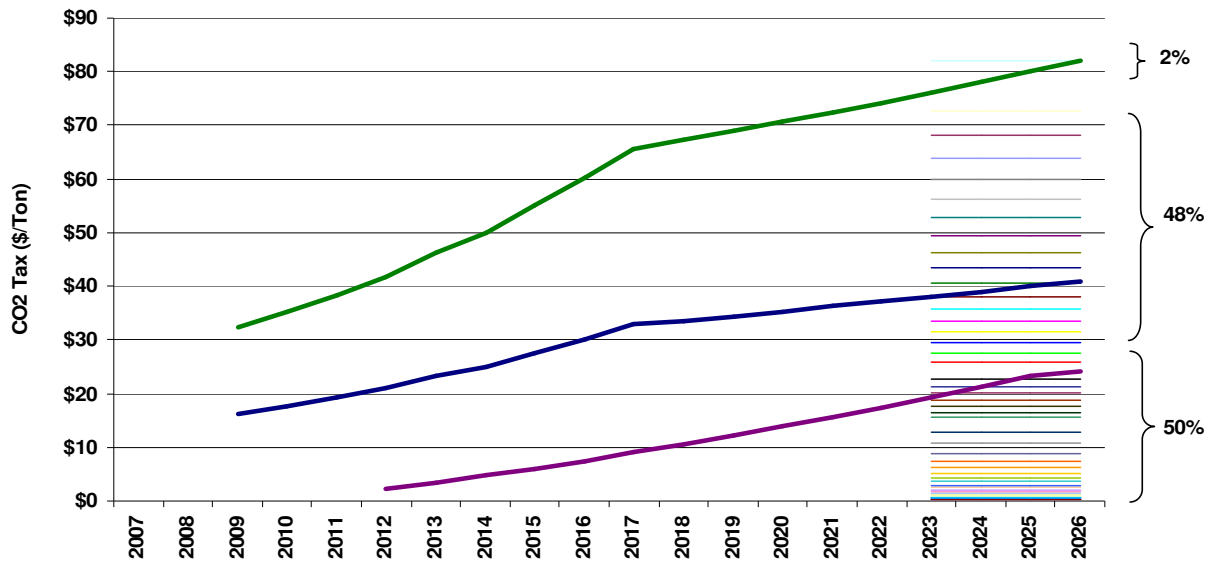
Emissions costs for CO₂, SO₂, and NO_x were developed using the scenarios described earlier for the development of the alternative resource plans and fuel prices were developed that correlated with these emission costs (Tables 5-11). Two alternative cases to the base case were developed: medium and high. Probabilities for the cases are expected to be base 50%, medium 48%, and high 2%. No lower environmental cost case was developed or considered to be probable.

To develop the probabilities for the CO₂ tax cases, GED utilized the 50 stratified Monte Carlo draws developed in Figure 8 and then chose high, medium, and base cases. The three cases are represented as follows:

- High – CO₂ tax level which changes dispatch merit order (i.e., gas displaces coal)
- Medium – Cap and Trade case where CO₂ markets are tempered by the ability to trade CO₂ credits globally
- Base – Represents Global Energy's Spring 2007 Reference case

The intersection of the three cases on Figure 12 was used to develop the probabilities.

Figure 12
CO₂ Tax Cases - Probabilities



Source: Global Energy

Range of Critical Uncertain Factors

Empire and its consultants presented low, base and high data “ranges” for the critical uncertain factors: market and fuel prices, load growth, and environmental costs. Base and high “ranges” were presented for the critical uncertain factor of capital and transmission costs (Refer to the decision tree in Volume I, page ES-9 and Volume V page 26). As pointed out in the Staff’s compliance report, “Given the fact that the alternative resource plans developed by Empire were designed to address specific scenarios, the alternative resource plans that Empire developed would likely have been similar to some of the contingency options required by 4 CSR 240-22.070(10)(D).” In addition to a study with all of the base assumptions (the base case), Empire did study specific scenarios related to high and low market and fuel prices; and high and low load growth; and high and low environmental costs. But the “ranges” of data from the decision tree did have an influence on the entire study since the plans were subjected to decision tree analysis. The monitoring of the critical uncertain factors (discussed in the supplemental file

“EDE_Monitoring and Reporting Critical Uncertain Factors”) will help the Company determine if the preferred resource plan, an alternate plan, or a contingency option is appropriate. Changes in these factors may even necessitate further in-depth studies.