**Guiding and Narrowed Questions about Climate Change**

**Based on:** <http://mass.pbslearningmedia.org/collection/climlit/>

**How does the climate system work?**

 What is the composition of the atmosphere? (chemistry)

 How does atmospheric circulation work? (physics)

 How does the carbon cycle work? (all sciences)

 What are the similarities and differences between weather and climate?

 How do feedbacks work in the climate system?

 How does albedo and deforestation work? others?

 What is the global energy balance and how has it changed over different time scales? How about the last century?

 What is the greenhouse effect? When was it first identified? How has it changed over the last century?

 How does the ocean interact with the climate?

 How does the Earth's orbital cycles (long-term and seasonal) affect climate?

 What is the regional climate of New England? How is it changing?

 What role does solar radiation play in the climate system? (physics)

 What role does the water cycle play in the climate system?

**What is causing the climate to change at this point in time?**

 What are the natural changes, including those that are cyclical?

 What are the human-caused changes?

**How do we measure and model climate?**

 Compare different climate models? What are their strengths and weaknesses?

 Locate different sources of climate data. Evaluate their reliability and validity.

**What are the impacts of climate change on the Earth System?**

 What are the particular risks in priority order that face New England/ Massachusetts?

 How is agriculture affected by climate change in our area?

 What are the potential economic impacts of climate change in our state?

 What are the ecosystems most likely to be impacted by climate change in our state?

 How are extreme weather conditions likely to impact our region?

 Does New England have freshwater resource vulnerabilities to climate changes?

 How do melting ice and permafrost impact New England?

 How does ocean warming and acidification affect New England?

 How are the plants and animals of Massachusetts affected by climate change?

 How is public health of Massachusetts citizens affected by climate change?

 How is sea level rise likely to affect Massachusetts?

**What is an appropriate human response to climate change?**

 Who are the agencies responsible for risk management?

 What adaptation strategies are appropriate at what level of governance?

 What mitigation strategies are appropriate at what level of governance?

 What steps can be taken by individual personal responsibility?