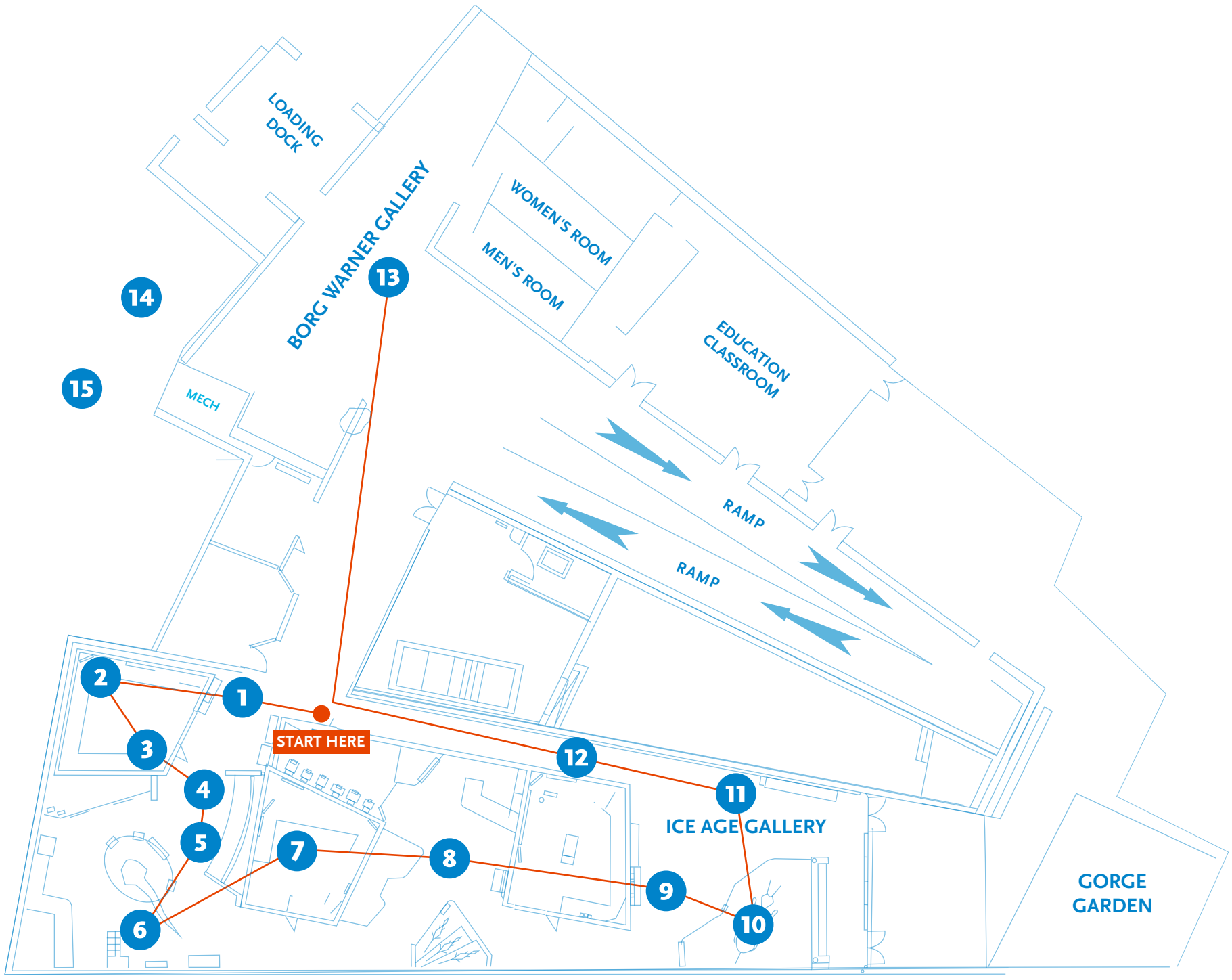
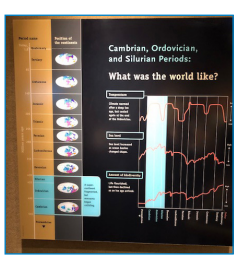
Climate Change & Energy Points of Interest in the Museum of the Earth



1 **The Earlest Photosynthesis** Cyanobacteria in ancient oceans were the earliest organisms to take in carbon dioxide through photosynthesis, an important part of how carbon is cycled through Earth's systems.

2 

Mass Extinctions Look for mass extinction panels throughout the Museum. Climate change often played a role.

3 

The Big Picture of Change Over Time Look for panels in each room about the climate, sea level, biodiversity, and the position of the continents at each time period.

4 **Life In Warm, Shallow Seas** Corals and other warm-water marine creatures lived here during the Devonian period, when the world was warmer than today. What is now Central New York was just south of the equator.

5 **Fossil Fuels: Shale Gas** Specimen No. 67 on the Devonian wall is from Fayette, NY. The rock formation from which it comes overlays the Marcellus shale, a source of natural gas in our region. Its dark color suggests it may be carbon-rich.

6 **Carbon Cycling in the Slow Lane: Plate Tectonics** The motion of Earth's tectonic plates can lead to climate change. Carbon dioxide (CO_2), which warms the atmosphere, is taken out of the atmosphere through weathering of rock uplifted during plate collisions. CO_2 is released from volcanoes that form at rifts or mid-ocean ridges where plates spread apart, or subduction zones where plates meet. Plate movements can also change where ocean waters flow, affecting climate because the oceans transport heat around the world. Since plate motion is slow, it leads to climate change on time scales of tens of millions of years.

7 **Fossil Fuels: Coal** Plant life exploded on land during the Carboniferous Period. These plants took in carbon dioxide, and that carbon was trapped in low-oxygen swamps when the plants died. This removal of carbon from the atmosphere led to global cooling. The fossilized remains of these plants are the coal deposits that we extract and burn today.

8 **Fossil Fuels: Does oil come from dinosaurs?** Most of the world's oil deposits (70%) formed during the Mesozoic Era, the time of the dinosaurs. But fossil fuels do not come from dinosaurs. The Earth's climate was tropical, with a warm ocean low in oxygen. When marine organisms such as phtyoplankton died and sank to the bottom, they did not decompose easily. Their remains fossilized into carbon-rich rocks from which we now extract oil.

9 **Rocks That Tell Temperature** Rocks with striations (linear scratches) reveal the presence of glaciers and a cold climate; sandstones tell the story of a dry environment; fossilized coral indicates a tropical climate with warm seas.

10 **Cold Weather Creatures** Mastodons were well adapted to the cold climate of the most recent glacial period.

11 **Glaciers and Coral Reefs** Glaciers and coral reefs are both sensitive indicators of current global warming. Many glaciers worldwide are shrinking, and coral reefs are facing stress from warmer waters and ocean acidification as the oceans absorb more carbon dioxide.

12 **Past Climate Trapped in Ice And Sediments** Ice cores from Antarctica contain an exquisitely detailed record of climate and greenhouse gases going back 800,000 years. Sediment cores reveal past climates and CO_2, with data from ocean cores going back 200 million years.

13 **The Right Whale** Before kerosene from petroleum, people burned whale oil for light. Right Whales contain large amounts of oil.

14 **Outside the Museum: The Earliest Fuel** Forests were once cleared for fuel as well as for agriculture and lumber.

15 **On the Roof** Solar panels, to generate electricity.

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EXHIBIT MAP