

Slide 1

TALKING POINTS:

- *None*

SLIDE DESCRIPTION: Blank slide with small leaf in the lower left corner

Slide 2

TALKING POINTS:

- *This is the first picture of the earth fully illuminated that any of us ever saw. It was taken on the last of the Apollo missions and it changed the way that humanity thought about our common home.*
- *It reminds us that we are all connected, and that our actions have an impact on our planet.*

SLIDE DESCRIPTION: “Blue Marble” photo of Earth from NASA’s Apollo 17 mission, taken as the crew was traveling toward the moon, December 7, 1972

Slide 3

TALKING POINTS:

- *There are only three questions remaining about the climate crisis: “Must we change?” “Can we change?” and “Will we change?”*
- *First of all, must we change? The scientific community all around the world has been telling us for a long that yes, we must change.*
- *Now Mother Nature is telling us.*

SLIDE DESCRIPTION: Text asking three questions: must we change, can we change, and will we change

Slide 4

TALKING POINTS:

- *First of all, must we change? The scientific community all around the world has been telling us for a long that yes, we must change.*
- *Now Mother Nature is telling us.*

SLIDE DESCRIPTION: “Must we change?”

Slide 5

TALKING POINTS:

- *The sky is not a vast and limitless expanse the way it appears to us as we stand on the ground and look up.*
- *In reality, there is just a thin shell of atmosphere surrounding the planet.*

SLIDE DESCRIPTION: Photo of the sun shining over Earth’s horizon through the two lowermost layers of the atmosphere: the troposphere and the stratosphere. Photo taken from the International Space Station.

Slide 6

TALKING POINTS:

- *We are putting 110 million tons of manmade global warming pollution into the atmosphere every single day.*
- *That pollution—especially carbon dioxide (CO₂) is building up and it’s trapping heat.*

SLIDE DESCRIPTION: Photo of smokestacks with text superimposed that states that we are dumping 110 million tons of unmade global warming pollution into the atmosphere every 24 hours

Slide 7

TALKING POINTS:

- *Here is the basic science of global warming. This has been understood by scientists since the 1800s.*
- *Energy from the sun comes to Earth in the form of light*
- *That energy is absorbed by the Earth and warms it.*
- *Some of that energy is re-radiated from the Earth in the form of heat.*
- *Some of that outgoing heat is trapped by the atmosphere, which is a good thing—it has kept our planet at a stable temperature.*

SLIDE DESCRIPTION: Illustration showing the “greenhouse effect.” The yellow lines represent energy from the sun; red lines represent heat energy being re-radiated from the Earth.

Slide 8

TALKING POINTS:

- *Now, however, we have been “thickening” the atmosphere by filling it with heat-trapping pollution. More heat energy is trapped, and it is warming our planet at an unprecedented rate.*

SLIDE DESCRIPTION: Illustration showing how we are changing the greenhouse effect with increasing greenhouse gas emissions.

Slide 9

TALKING POINTS:

- *There are many sources of manmade global warming pollution: agricultural practices, forest burning, transportation, and many other factors.*
- *But the main source and cause of the rising global temperatures we are seeing today is the burning of fossil fuels.*

SLIDE DESCRIPTION: Illustration of major greenhouse gas emissions sources

Slide 10

TALKING POINTS:

- *Fossil fuels still provide more than 80% of the world's energy. Their use—and emissions—has gone up dramatically since World War II.*
- *Notice that in the last few years, though, there has been a leveling off as the world adopts more and more clean energy solutions.*

SLIDE DESCRIPTION: Graph showing the growth of global carbon emissions from fossil fuels in billion metric tons of carbon, 1850-2016

Slide 11

TALKING POINTS:

- *As a result of this pollution being trapped in the atmosphere, global temperatures have risen dramatically.*

SLIDE DESCRIPTION: Graph showing the global average land and ocean temperature anomalies (deviation from the 1951-1980 norm) every year from 1880-2016

Slide 12

TALKING POINTS:

- *16 of the 17 hottest years ever measured with instruments have occurred since 2001*

SLIDE DESCRIPTION: Illustration showing that 16 out of the 17 hottest years have occurred since the year 2001, and that the hottest year on record was 2016. The red circles depict the 16 hottest years on record, starting with the hottest, according to the National Aeronautics and Space Administration Goddard Institute for Space Studies surface temperature analysis.

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TALKING POINTS:

- *The hottest year of all was 2016.*

SLIDE DESCRIPTION: Larger circle showing 2016 as the hottest year on record, globally.

Slide 14

TALKING POINTS:

- *Heat itself is a problem in many parts of the world and many parts of this country.*
- *Heat affects not only people but animals, crops, and our weather.*

SLIDE DESCRIPTION: Photo of a man who succumbed to heat exhaustion being moved by two medical professionals in front of Trinity Church in the city of Boston, Massachusetts.

Slide 15

TALKING POINTS:

- *On a global basis, more than 90% of all the extra heat energy trapped by our atmosphere is going into the oceans.*
- *This heat makes ocean-based storms like hurricanes, typhoons and cyclones stronger and more destructive.*

SLIDE DESCRIPTION: Graph of global ocean heat content, 1950-2015

Slide 16

TALKING POINTS:

- *In August 2015, three category 4 hurricanes occurred simultaneously in the eastern Pacific Ocean, the first time that had ever happened in this ocean basin.*

SLIDE DESCRIPTION: Satellite image showing three major hurricanes occurring simultaneously in the Pacific Ocean on August 30, 2015

Slide 17

TALKING POINTS:

- *The extra heat also disrupts the water cycle.*
 - *The amount of water vapor that evaporates off the oceans increases as the oceans warm.*
 - *That water vapor is carried over the land and often falls in much bigger precipitation events.*
 - *When the land can't absorb all the water that falls in these larger storms and downpours, we see floods and mudslides.*

SLIDE DESCRIPTION: Illustration of the hydrological (water) cycle

Slide 18

TALKING POINTS:

- *Extreme precipitation events have produced more rain and become more common since the 1950s in many regions around the world, including much of the US.*

SLIDE DESCRIPTION: Photo of a supercell with a column of rain at its center, near Glasgow, Montana, July 28, 2010

Slide 19

TALKING POINTS:

- *Extreme precipitation events lead to record flooding, which has been occurring all over the world.*

SLIDE DESCRIPTION: Photo of a flooded highway in the Indian State of Tamil Nadu, India on December 2, 2015

Slide 20

TALKING POINTS:

- *Sometimes people wonder how global warming can be blamed for causing more precipitation and flooding, and at the same time, more drought.*
- *The extra heat that's being trapped actually leads to both. And as the climate changes, precipitation patterns also change, leaving some places with less rainfall than before.*

SLIDE DESCRIPTION: Illustration showing how evaporation from oceans is the same process that pulls water from land causing droughts

Slide 21

TALKING POINTS:

- *Changing precipitation patterns can lead to drought and water shortages. Southern Brazil, for example, suffered a devastating drought in 2015 and 2016.*

SLIDE DESCRIPTION: Photo showing cracked, dry soil in São Paulo state, Brazil

Slide 22

TALKING POINTS:

- *Higher temperatures also have a direct effect on the incidence and severity of wildfires.*
- *Here we see that the number of large fires corresponds closely to years with higher average spring and summer temperatures.*
- *Today, the “fire season” in the western U.S. is more than 100 days longer than it was in the 1970s.*

SLIDE DESCRIPTION: Graph comparing the number of large fires in the western US with the region’s average spring-summer temperature from 1970 through 2015

Slide 23

TALKING POINTS:

- *In 2016, this fire in the heart of the Canadian tar sands region destroyed large parts of the city of Fort McMurray, Alberta and forced the evacuation of over 100,000 people.*

SLIDE DESCRIPTION: Photo of cars evacuating from Fort McMurray during a large wildfire on May 3, 2016

Slide 24

TALKING POINTS:

- *The number of climate-related extreme weather events has been going up worldwide, according to the insurance industry.*
- *In 2016 alone these disasters caused losses totaling over USD \$175 billion.*

SLIDE DESCRIPTION: Graph of worldwide extreme weather and climate-related catastrophes by number of events, 1980-2016

Slide 25

TALKING POINTS:

- *This glacier in southwest Greenland had almost completely melted by 2013 due to rising temperatures.*

SLIDE DESCRIPTION: First slide in a three-slide sequence showcasing the drastic change of an unnamed glacier in southwest Greenland between 1935 and 2013 and a graph showing the declining ice mass in Greenland in gigatonnes, 2002-2016.

Slide 26

TALKING POINTS:

- *This glacier in southwest Greenland had almost completely melted by 2013 due to rising temperatures.*

SLIDE DESCRIPTION: Second slide in a three-slide sequence showcasing the drastic change of an unnamed glacier in southwest Greenland between 1935 and 2013 and a graph showing the declining ice mass in Greenland in gigatonnes, 2002-2016.

Slide 27

TALKING POINTS:

- *NASA has precisely measured the decline in the mass of ice in both Greenland and Antarctica.*
- *All this extra melting is raising sea levels worldwide.*

SLIDE DESCRIPTION: Third slide in a three-slide sequence showcasing the drastic change of an unnamed glacier in southwest Greenland between 1935 and 2013 and a graph showing the declining ice mass in Greenland in gigatonnes, 2002-2016.

Slide 28

TALKING POINTS:

- *This flooding occurred in Miami Beach, Florida, on a sunny day with no rain.*
- *High tides now regularly flood the streets of Miami Beach, as well as several other coastal cities around the world.*
- *This situation will only get worse as sea levels continue to rise.*

SLIDE DESCRIPTION: Image showing a vehicle driving through the flooded streets of Miami on a sunny day.

Slide 29

TALKING POINTS:

- *Miami is the number one city at risk in terms of assets at risk – along with Guangzhou China, New York/Newark, and others.*

SLIDE DESCRIPTION: Graph of the top 10 cities at risk from sea-level rise in 2070 ranked by assets at risk

Slide 30

TALKING POINTS:

- *Looking at cities at risk by population, we see that many huge cities in developing countries are very much in danger.*
- *If parts of these cities become uninhabitable, where will the people who live there go?*

SLIDE DESCRIPTION: Graph of the top 10 cities at risk from sea level rise in 2070 ranked by population at risk

Slide 31

TALKING POINTS:

- *The Department of Defense in the United States has long warned about refugee crises connected to the climate crisis, as well as pandemic diseases, water shortages and food shortages.*

SLIDE DESCRIPTION: Quote from the US Department of Defense's 2014 Climate Change Adaptation Roadmap, publicly released October 13, 2014

Slide 32

TALKING POINTS:

- *Heat stress is now beginning to decrease crop yields from rice and corn and soybeans.*
- *Exposure to higher levels of carbon dioxide also decreases the nutrient content of many staple crops such as rice, wheat and soy.*

SLIDE DESCRIPTION: Photo of heat-affected corn with a quote superimposed from David Lobell of Stanford University

Slide 33

TALKING POINTS:

- *Infectious diseases, heat stress, air pollution, and waterborne diseases are all influenced by a changing climate – and not in our favor.*

SLIDE DESCRIPTION: Quote from Professor Hugh Montgomery stating that the climate crisis is a medical emergency

Slide 34

TALKING POINTS:

- *Warmer temperatures have an impact on the spread of tropical diseases. Modern transportation and air travel play a part, but the potential range for many diseases expands as regions farther and farther poleward get warmer.*
- *This means there are more and more places where a disease like Zika can take root.*

SLIDE DESCRIPTION: Map of tropical disease origins and spread

Slide 35

TALKING POINTS:

- *The main mosquito that spreads Zika (and Dengue and Yellow Fever) is now covering a wider range in a warmer, wetter world.*
- *In warmer temperatures the virus incubates faster, the mosquitos breed more and are able to transmit the disease longer.*
- *The health impacts of the climate crisis are often overlooked, but will affect millions of people.*

SLIDE DESCRIPTION: The *Aedes aegypti* mosquito, the principal carrier of the Zika virus

Slide 36

TALKING POINTS:

- *Climate change, along with other factors such as ecosystem loss, is contributing to the worst extinction event since the extinction of the dinosaurs 65 million years ago.*

SLIDE DESCRIPTION: Text slide about the land-based species extinction threat in the twenty first-century, with a photo of an endangered golden poison frog.

Slide 37

TALKING POINTS:

- *All of these threats – including many we haven't even covered here, and the fact that the World Economic Forum says climate change is the number one threat to the global economy – help to answer the question: must we change?*

SLIDE DESCRIPTION: Illustration showing the multiple costs of carbon pollution

Slide 38

TALKING POINTS:

- *So do we have to change? Yes, we do!*

SLIDE DESCRIPTION: Text slide that reiterates the first of the three questions: Must we change?

Slide 39

TALKING POINTS:

- *But what about the second question? Can we change?*
- *The answer to this question is very, very exciting and positive.*

SLIDE DESCRIPTION: Text slide that reiterates the second of the three questions: Can we change?

Slide 40

TALKING POINTS:

- *We've got the solutions available to us now.*

SLIDE DESCRIPTION: Text slide stating that we have solutions to the climate crisis at hand

Slide 41

TALKING POINTS:

- *Look for example at renewable energy.*
- *Wind energy was predicted to provide 30 gigawatts of electricity worldwide by 2010.*
- *As of 2016 we had exceeded that prediction by 16 times over.*

SLIDE DESCRIPTION: Slide showing how global wind power capacity installations have vastly exceeded market projections from 2000

Slide 42

TALKING POINTS:

- *We see an exponential curve when we look at the amount of wind energy being built around the world.*

SLIDE DESCRIPTION: Graph showing the growth of global wind energy capacity in megawatts, 1980-present

Slide 43

TALKING POINTS:

- *Wind energy could supply 40 times more electricity than the entire world currently uses.*

SLIDE DESCRIPTION: Photo of wind turbines with text stating that wind could supply worldwide electricity consumption 40 times over

Slide 44

TALKING POINTS:

- *Solar energy is an even more dramatic story.*
- *15 years ago the best projection was that we would install 1 gigawatt of solar energy capacity per year by 2010.*
- *By 2010, we exceeded that goal by 17 times.*

SLIDE DESCRIPTION: Slide one of a two-slide sequence showing how global solar power capacity installations have vastly exceeded market projections from 2002

Slide 45

TALKING POINTS:

- *In 2016 we exceeded the goal by 75 times.*

SLIDE DESCRIPTION: Slide two of a two-slide sequence showing how global solar power capacity installations have vastly exceeded market projections from 2002

Slide 46

TALKING POINTS:

- *Even more dramatically than with wind, we see an exponential curve in the amount of solar energy installed around the world.*

SLIDE DESCRIPTION: Graph showing the worldwide growth of solar PV installations in gigawatts, 1980-2016

Slide 47

TALKING POINTS:

- *Just as we have seen with other technologies, such as computer chips and cell phones, solar costs have fallen dramatically. In some regions, solar energy is less than half the cost of electricity from burning coal.*

SLIDE DESCRIPTION: Graph showing the decline in cost of crystalline silicon solar cells in US dollars per watt (inflation adjusted), 1976-2016

Slide 48

TALKING POINTS:

- *In many countries where there's no universal electricity grid, we are seeing consumers and businesses leap-frog over old technologies and install solar panels in places that have long been denied access to electricity.*

SLIDE DESCRIPTION: Photo of a solar panel provided by Azuri Technologies on a rural roof in Nimule, South Sudan

Slide 49

TALKING POINTS:

- *Chile is a true solar success story, thanks to its policy decisions.*
- *The country's solar market took off slowly, but...*

SLIDE DESCRIPTION: Graph showing the growth of solar power in Chile in megawatts of capacity from 2013 to what is now in process

Slide 50

TALKING POINTS:

- *... look at what's happening now.*
- *There are many regions in the world where this type of growth and development are possible.*

SLIDE DESCRIPTION: Graph showing the growth of solar power in Chile in megawatts of capacity from 2013 to what is now in process

Slide 51

TALKING POINTS:

- *Every hour the Earth gets as much energy from the sun as we need to run the entire global economy for a year.*
- *If we can increase the fraction of that that we harvest and use, we can make a lot of progress towards solving the climate crisis and helping local economies at the same time.*

SLIDE DESCRIPTION: Image of the Sun's rays striking the Earth and text stating that enough solar energy reaches the Earth every hour to meet the world's power needs for a full year

Slide 52

TALKING POINTS:

- *Battery storage is an essential part of the green energy revolution. Batteries allow us to store excess solar or wind energy and use it during those times when the sun isn't shining or the wind isn't blowing.*
- *Batteries are also critical for the electric vehicle market.*
- *As storage technologies get more efficient and cheaper, the market is growing quickly.*

SLIDE DESCRIPTION: Graph showing the historical and projected energy storage capacity growth in the US in megawatts, 2012-2021

Slide 53

TALKING POINTS:

- *Within the next eight years, highly efficient LED lights are predicted to virtually take over the market.*
- *Energy-efficient technologies like LEDs save people money and help to reduce emissions by cutting down on the amount of electricity we use.*

SLIDE DESCRIPTION: Graph showing the historical and projected percentage of the total lighting market held by LED lights in 2010, 2015, 2020, and 2025

Slide 54

TALKING POINTS:

- *All these automobile manufacturers are now offering or preparing to offer electric vehicles.*
- *This is another part of the sustainability revolution.*

SLIDE DESCRIPTION: Text list of auto manufacturers with an electric model in production

Slide 55

TALKING POINTS:

- *So can we change? Yes!*

SLIDE DESCRIPTION: Text slide that reiterates the second of the three questions: Can we change?

Slide 56

TALKING POINTS:

- *What about that final question: will we change?*
- *Here, too, there's exciting news.*

SLIDE DESCRIPTION: Text slide that reiterates the third of the three questions: Will we change?

Slide 57

TALKING POINTS:

- *In December of 2015, at the Paris climate negotiations, virtually every nation in the world agreed to phase down greenhouse gas pollution to net zero emissions as early in the second half of this century as possible.*
- *In addition to actions by countries, it is more important than ever that we all take the lead on climate. We are seeing corporations, states and provinces, and cities commit to taking action to reduce emissions.*

SLIDE DESCRIPTION: Image of canal boats in the Seine River in Paris and text about the Paris Agreement's net zero greenhouse gas emissions goal

Slide 58

TALKING POINTS:

- *We're seeing marches and demonstrations and demands at the ballot box for the kinds of changes that are needed.*

SLIDE DESCRIPTION: Aerial photo of the People's Climate Movement March in Washington, DC on April 29, 2017

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TALKING POINTS:

- *Please join those who are speaking out and making choices to fight the climate crisis.*

SLIDE DESCRIPTION: Text slide urging your audience to join others in fighting the climate crisis.

Slide 60

TALKING POINTS:

- *Use your voice and your vote and your choices in the marketplace and in your life.*
- *Speak Truth to Power like your world depends on it.*

SLIDE DESCRIPTION: Text slide urging people to speak truth to power.

Slide 61

TALKING POINTS:

- *Because your world depends on it. We need your help.*

SLIDE DESCRIPTION: Photo of the Earth from the DSCOVR satellite with text that your world depends on you

Slide 62

TALKING POINTS:

- *To learn more about the climate crisis and what you can do to help solve it, please consider seeing the film, *An Inconvenient Sequel: Truth to Power*, or reading the book of the same name.*

SLIDE DESCRIPTION: Images of *An Inconvenient Sequel: Truth to Power* movie poster and book cover

Slide 63

TALKING POINTS:

- *Thank you!*

SLIDE DESCRIPTION: Blank slide