

Al Gore and Bill Nye

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Announcer: This is Climate One, changing the conversation about energy, economy and the environment.

Resistance to the social and moral change needed for meaningful climate action is nothing new.

Al Gore: I grew up in the south with the civil right movements. The climate denial is no more ferocious than the resistance to civil rights in the South. And yet, it gave way.

Announcer: Former Vice-President Al Gore is not the only one bringing the climate movement to the masses. As TV's "Science Guy," Bill Nye has moved from getting kids psyched about science to challenging adults to get working on climate solutions.

Bill Nye: If we were talking about climate change the way we talk about the Apollo program, we're gonna beat these other guys to the moon, we would be getting it done.

Announcer: Al Gore and Bill Nye. Up next on Climate One.

Announcer: Looking for a movie that takes climate science to the masses? Welcome to Climate One - changing the conversation about energy, economy and environment. Climate One conversations - with oil companies and environmentalists, Republicans and Democrats - are recorded before a live audience, and hosted by Greg Dalton.

I'm Devon Strolovitch. In 2006, Al Gore brought his climate change slideshow to the American public in the Academy Award winning documentary "An Inconvenient Truth." Back then, Gore warned of an increasing "planetary emergency" if global warming continued unchecked - including rising sea levels, coastal flooding, and nations of climate refugees. In the 2017 follow-up, "An Inconvenient Sequel: Truth to Power," Gore continues his tireless fight to spread awareness of the problem - and shines a light on some possible solutions.

In the first part of today's show, Al Gore joins host Greg Dalton to discuss the making of the film and the path forward. Joining them are the film's directors, Bonni Cohen and Jon Shenk, who shadowed Gore from his Nashville home to the typhoon-devastated island of Tacloban in the Philippines to the Paris climate summit. Speaking truth to power, with Al Gore, on Climate One. Here's Greg Dalton.

Greg Dalton: Vice President Gore, I watched An Inconvenient Truth and then I watched An Inconvenient Sequel. And it seems to me that in the first movie you were speaking from your intellect, lots of facts. And in this one you're speaking much more passionately from your heart. Is that true?

Al Gore: I don't know. There's an old song written in Nashville by Kris Kristofferson, sung famously by Janis Joplin with the line, "Freedom's just another word for nothing left to lose." So maybe that applies but it's also down to the incredible skill that Bonni and Jon have with the cinéma vérité style, you know if they asked to follow you around with cameras for two years of your life, talk to me first. It actually it was a wonderful experience, but when I saw their first rough cut, I was

really and truly astonished. There are a lot of things that were on film where I had actually forgotten that they were around because they were always around. And so I give the credit to them for how great the movie is. I'm biased, but I think their talent is just really awesome.

Greg Dalton: Really is in some ways. Rarely are sequels better than the first one. I think this is one of those examples. Bonni Cohen, so how did you get him to open up? How did you convince him you could follow the vice president around for two years?

Bonni Cohen: Well, I can't give away those secrets, I'd have to, you know, I don't know what I'd have to do to you.

[Laughter]

You know, when we first went to meet Al in Nashville at his home in Nashville, he was incredibly gracious Southern gentleman that he is. Then proceeded to show us the ten-hour version of his slideshow which is if you know the slideshow, it has kind of an accordion effect that can expand and contract and expand further. And if you give Al the opportunity which we did because we needed to know everything, we got the full whack. So it was quite an experience, it was a life experience that we will never forget. And what we noted at the time of hearing the slideshow was that there's all this work that Al is doing every minute of every day that goes into the building of the slideshow. And we started to think together about what those moments were, the talking to the scientists, meeting with climate refugees, talking to politicians, you know, scouring for information with every minute of every day that he takes breath. So we talked together about how exciting it could potentially be and dramatic to get behind the scenes for that work to see firsthand what that work looked like. He -- I think Al, correct me if I'm wrong -- I think Al understood very early on that those kinds of -- the authenticity of those scenes would be undeniable. And that, you know, given where we are in the world where we unfortunately still are having to convince some people about the climate crisis and now go the next step to convince them about the sustainability revolution, that the authenticity of *cinéma vérité* was the way to go. So we kind of first spoke with him on an intellectual level and then, you know, Jon shot this beautiful movie in its entirety and is responsible for being that fly on the wall with Al in the scenes. So, you know, he should certainly comment on this, but when things started to happen in a room he's so engaged with whatever is going on that he did in fact forget what was happening and we were able to really capture authentic moments, emotional moments.

Greg Dalton: And one where that really comes through, Jon Shenk, is in Paris where it's two weeks before the climate summit, Vice President Gore is doing this 24-hour kind of video and then something happens. Set the scene for us in Paris.

Jon Shenk: Yeah, couple of weeks before the Paris climate conference that was to take place in December 2015. Al went to Paris in late November with The Climate Reality Project with the idea that he was gonna do a 24-hour broadcast around the world to raise awareness specifically for how important Paris was in the environmental history. And we were kinda gearing up to film for 24-hour straight. Al was gearing up to stay up 24 hours and do broadcasts. Anyways, we were there and that day happened to be the fateful day of the terrorist attacks that occurred in late November 2015. We were under the Eiffel Tower in the middle of the city and we started hearing sirens and ambulances and police cars going by of course wondering what the heck was going on, everybody had their cell phones out. And you see in the film this drama unfold essentially you as the viewer find out as we found out that night what occurred. And the interesting thing that happens is that, you know, people get very scared of course. We really viewed it as kind of a key moment in the plot of the film because Al rightly so identified this as an important moment where the media doesn't always connect the dots between current events that happen in the world. And of course, you know, Al steps up and gave a great and incredibly emotional speech that night, helping to comfort the French crew

and telling the French that the Americans stood with them in that time of difficulty. But then kind of goes on to talk about the human condition and how it's in difficult times that people bind together. And it set a very kind of somber and serious but proactive tone going into the Paris climate negotiations which happened two weeks later in Paris.

Greg Dalton: Then, Vice President Gore, there was a change to the film. There's some changes when President Trump took office.

Al Gore: Almost choked on that.

[Laughter]

Greg Dalton: It's a little hard to.

Al Gore: Go ahead. Sorry.

[Laughter]

Greg Dalton: So tell us how that changed your thinking and how it changed the film and changed a lot more.

Al Gore: Well, Bonni and Jon and I had talked numerous times during 2016 about the fact that we really did not know for sure how the election was going to come out. And whoever was elected what that person would do on climate; of course there was a stark choice. But third we didn't really know how those events would feel after they settled in. So they wisely made the decision to wait in order to finish the film until we really knew what was going to happen, what had happened and how it was going to feel. And actually we knew that even after the festival premiere at Sundance that there would have to be changes to the movie to incorporate the new elements of the narrative as they were unfolding.

Greg Dalton: And a lot of that is really pulling out from the Paris Climate Accord. You issued a statement on that, that's part of the movie. How do you think the pullout from the Paris climate accord is gonna affect that accord?

Al Gore: Yeah, I was really worried when Donald Trump made his statement. I had tried hard to convince him in personal conversations starting in Trump Tower during the transition, continuing in the White House, to stay in the Paris agreement. I thought I really do think there was a chance he would come to his senses, but I was wrong about that. But when he did make his speech I was deeply concerned that other countries might have used it as an excuse to pull out of the Paris agreement themselves. But I was immensely gratified when almost immediately afterward the entire rest of the world redoubled their commitment to the Paris agreement almost --

[Applause]

-- as if they were saying, well, we'll show you Donald Trump. And then here in this country so many governors and mayors and business leaders are moving in that direction and all of these groups have stepped up to say we're still in Paris; we're gonna meet the U.S. commitments regardless of what President Trump does or says or tweets. And now the best estimates give rise to legitimate hope that the U.S. is likely to meet the commitments made by former President Obama in the Paris agreement regardless of Donald Trump. Now the Paris agreement even if all of its commitments by all 194 nations are kept, is still not enough; we need to do more. But as and Bonni and Jon document in the film, how the cost of renewable energy, batteries, electric vehicles, efficiency improvements, all part of the broader sustainability revolution are coming down in cost so

dramatically that the world has the solutions now. And so I was really heartened that the momentum generated around the world, not least by the Paris agreement not least by the technology revolution it is now going to continue moving forward. And others are coming to the rescue -- one other point, the first day that the U.S. can actually legally leave the Paris agreement -- not entirely by coincidence -- is the day after the 2020 presidential election. And if there's a new president --

[Laughter / Applause]

-- a new president can simply give 30 days' notice and rejoin the Paris agreement. So we're gonna win this. The remaining question is whether we'll win it in time. Regrettably, a lot of damage has been done. We still have the opportunity to avoid the catastrophic results for human civilization. But we have to build on this momentum and increase it.

Announcer: Former Vice-President Al Gore, along with Bonni Cohen and Jon Shenk, directors of the 2017 film *An Inconvenient Sequel: Truth to Power*. This is *Climate One*. Coming up, Greg Dalton continues the conversation with the filmmakers and their star:

Bonni Cohen: We spent a lot of time on the Gore family farm in Carthage, Tennessee, which is an unbelievably beautiful part of the world. But we feel a tremendous loss not having been able to put more of that work into the film.

Announcer: That's up next, when *Climate One* continues.

Announcer: We continue now with *Climate One*. Greg Dalton is talking to former Vice-President Al Gore, along with Bonni Cohen and Jon Shenk, directors of the 2017 film *An Inconvenient Sequel: Truth to Power*. Here's your host, Greg Dalton.

Greg Dalton: Some people who are not often part of this climate conversation are people on the right, people in Tea Party and there's a cofounder of the Tea Party movement named Debbie Dooley, who you know. And she loathes Hillary Clinton, she loves Donald Trump, she doesn't think Russia collusion is a big deal. Let's hear what she has to say, some surprising things she has to say about clean energy and fossil fuels.

[Start Clip]

Debbie Dooley: 75% of Trump supporters like renewables and they think we should do more to advance renewables. We need to look forward to innovation to technology to clean energy and job creation. Koch brothers funded groups, they're horrible. I don't like it. I'm not fond of Koch brothers or their groups in any way because I've had experience with them actually lying outright lying and distorting the facts. And some of the very same people that are these groups like Heartland and Competitive Enterprise Institute that are saying man is not damaging the environment and renewables are bad, in the 1990s the same groups were taking money from big tobacco to convince America secondhand smoke pose no health risk. If they lied to us once, why should we believe anything they say?

[End Clip]

Al Gore: Alright!

[Applause]

Alright, Debbie!

Greg Dalton: That's Debbie Dooley, cofounder of the Tea Party movement. Vice President Gore, your response to reaching people not -- that's an unusual Tea Party person but reaching people who disagree with Democrats on a lot of things but she agrees on clean energy.

Al Gore: Yeah, one of the things that's happening is people who aren't comfortable using the phrase global warming or climate crisis are first of all noticing that the weather is very weird now, the floods and the droughts and sea level rise in coastal communities and Zika and so forth are really waking people up even if they don't want to get into a scientific dialogue about climate. And secondly, they, as Debbie Dooley just said they are seeing the opportunities to save money and free themselves from the abuses they've sometimes felt at the hands of utility monopolies. And as the cost continues to come down further, they want to save money; they want energy independence and energy freedom. And Bonni and Jon had the terrific idea when we were filming the movie of going to Georgetown, Texas. And there's a scene in the movie where Mayor Dale Ross of Georgetown, Texas, he describes it as the reddest city and the reddest county in Texas which is pretty red. And he's a conservative Republican Trump supporter but he's also a CPA. And he did the numbers for how he could save his citizens' money there in the heart of oil country. They have just completed the transition to 100% renewable energy and they're saving money. And as they save the money, all of a sudden he feels liberated to say and, you know, the air is cleaner and isn't it better not to threaten the future of the world for the next generation? So coming at it through the economic pathway, is really happening in this country and all around the world.

Greg Dalton: Bonni Cohen, tell us about some of the scenes that didn't make it into the film that you wish you could've fit in but it didn't fit.

Bonni Cohen: We spent a lot of time on the Gore family farm in Carthage, Tennessee, which is an unbelievably beautiful part of the world. But there's some very interesting work that Al is doing there converting his parents' tobacco farm into a sustainable organic working farm. I mean it's underway, it's working. They're putting vegetables out to communities already.

Al Gore: Supported agriculture.

Bonni Cohen: And supported agriculture, right. We spent a lot of time there and actually feel a tremendous loss not having been able to put more of that work into the film I would say. Also there is, you know, there is, you visit, Al visits climate refugees in Tacloban in the Philippines which it was hit by superstorm Haiyan it was one of the worst storms to ever hit landfall and the destruction was unbelievable. And, you know, we went around and Al met a lot of, there's a scene in the film where he meets with some climate refugees, but he actually goes out into the villages and meets with a mother whose home was filled up to the top with water, which had never happened in the 40 years that she had, her family had lived in this house. And it's a very kind of beautiful scene and, you know, you have to leave a lot of these kinds of things on the editing room floor unfortunately, but we had we probably shot 150 hours of footage over the course of the making of the film.

Greg Dalton: That's a lot. We have a question from Facebook. Samuel John asks for Vice President Gore. Do you see the climate problem as more of an issue of excess consumption or not enough green tech? Does the film touch on global consumption?

Al Gore: Yes. And it's commonplace these days to get a question about the linkage between the growth of consumption and the climate crisis. And that is certainly legitimate issue and a lot of people are addressing it in their own lives. The climate crisis in my way of thinking about it is the most serious manifestation of an underlying collision between the way our global civilization is

presently organized and the surprisingly fragile nature of the ecological system. You could point to so many other examples, 50 billion tons of plastic since the 1950s, all of it still around a lot of it in the oceans. The destruction of the forest, the sixth great extinction which the biologists will tell you almost to a person that's the most serious manifestation of this. So yes, we cannot have unlimited growth of consumption in a finite world. But technology can contribute to the solution of that aspect of the crisis as well. We now have the emergence of an increasingly weightless economy with more and more so-called growth in the digital world and with the reduction in material use in the products. And you have great companies like Patagonia promoting the recycling of goods and discouraging the consumption of new goods. And we have a long way to go on that for sure, but that's definitely a part of the crisis.

Greg Dalton: And one part underneath that is population. A lot of the environmentalists don't like to talk about it. You talked about it way back but that's driving a lot of the consumption, 9 billion people.

Al Gore: Yeah, absolutely. And it's on the way to probably more than 11 billion before it stabilizes, potentially more. But here is the good news. The effort to stabilize population growth in the world is actually a success story unfolding in slow-motion. And a lot of progress has been made. I led the U.S. delegation to a conference in Cairo in 1994 where this consensus was really solidified. It goes from one equilibrium population growth goes from one equilibrium down an S-curve to another. The first has high birth rates and high death rates and large families. And the second equilibrium is low birth rate, low death rates, small families. Most of the wealthy countries have already made that transition, but all other countries in the world are on their way down that S-curve. Now what causes this transition, four things and all these factors have to be present. The education of girls, the empowerment of women to help to participate in the choices in the family, the community, the nation. The availability of fertility management on the ubiquitous or nearly ubiquitous basis so that women and their partners can choose how many children to have and the spacing of those children. And most importantly continued declines in child mortality. A famous African leader said 70, 80 years ago the most powerful contraceptive in the world is the confidence by parents that their children will survive. When all four of those conditions are present, it's almost magical that the growth rate comes down quite quickly. The death rates come down first and a generation later the birth rates come down. But now the U.S. has reneged on its promises to assist the world in making fertility management, more available, and there's a whole history on that that we won't go into. But if we can make sure all four of those conditions are present, we are going to stabilize population growth.

Announcer: Former Vice-President Al Gore talking to Greg Dalton, around the time of the release of *An Inconvenient Sequel: Truth to Power*. This is *Climate One*. 2017 also saw the release of another documentary about a prominent climate communicator. You may know him best as host of the Emmy-winning children's show *Bill Nye the Science Guy*. But since ending the program in 1999, Nye and his famous bow tie have taken on a new challenge: stopping the spread of anti-scientific thinking across the world. In his documentary *Bill Nye: Science Guy*, director Jason Sussberg shadows Nye as he goes toe-to-toe with outspoken climate deniers and travels the world to show the causes and effects of climate change. Let's listen as Greg Dalton asks Nye and Sussberg about making the documentary, the state of climate science and how to save the planet.

Greg Dalton: One of the most dramatic moments in the film *Bill Nye: Science Guy* is when you go to Greenland and you go into the scary looking tube, cave, tunnel down into the ice. So Bill Nye, tell us what you learned there and why it matters to people who will never go to Greenland.

Bill Nye: You're not going to Greenland? What I learned that it's all real. So for years, I have used the ice cores in my public talks. And by use, I mean I did visit the Ice Core lab in Golden, Colorado,

next to Denver. Where they, we, keep the ice from all over the world like where you went to visit and stuff. But in Greenland we got to participate and carry pieces of ice around and label the plastic bags and stuff. So this very cool -- I'm mechanical engineer because I like this kind of thing. This very cool hollow drill bit and you pull up .70 cm pieces of ice and you can see the layers of snow just like tree rings. And as the snowflakes fall, they capture bubbles of air between the tines of the snowflakes and they get compressed and the air is trapped in the ice indefinitely. You pull it up and you can tell the ancient atmosphere. And I used to tell the story in my college talks and stuff but then when you're actually there and you actually get to see it and hold it, it's really cool in fact it's really cold, freaking cold.

Greg Dalton: So when people say we're not sure what the climate was like.

Bill Nye: Yes we are -- is the response. Yes, we are.

Greg Dalton: There's something of an anti-science movement in this country and you talked about that in the film. Let's hear a clip of Bill Nye: Science Guy, talking about this anti-science movement in the United States.

[Start Clip]

Male Speaker: Well, Bill Nye is in everyone's mind explaining that CO2 is rising. Bill Nye is just going around and saying CO2 is up therefore global warming is dangerous we should be concerned. It's not, it's not dangerous.

Male Speaker: The world is getting warmer. It's continually getting warmer.

Male Speaker: If I'm right the reversals will lead to a degree to a degree and a half cooling. If you're right or not but what are we worried about right now.

Male Speaker: We have this increasing antiscience movement in the United States.

Donald Trump: Our president is worried about global warming. What a ridiculous situation.

[End Clip]

Greg Dalton: Quotes of Fox News and other commentators, then candidate Donald Trump from Bill Nye: Science Guy the documentary. Bill Nye, why has that movement that effort been so effective in this country?

Bill Nye: Well my understanding is the fossil fuel industry has been very successful at introducing the idea that plus or minus 2% is somehow the same as plus or minus hundred percent. That scientific uncertainty is the same as doubt about the whole thing, and that's not accurate but it is I think writ large the fossil fuel industry.

Greg Dalton: So Jason Sussberg, there's some really interesting characters in this film. Tell us about Joe Bastardi who is a straight from central casting.

Jason Sussberg: Yeah. Joe is a trained meteorologist. He has his degree from Penn State University it's the same university that Dr. Michael Mann teaches at. And he is a serious meteorologist he works for an organization called Weatherbell. He's actually a very good long-range forecaster. He's serious at what he does. However, and Bill can attest to this he just doesn't see the link between CO2 and our rising climate. So it's a little mysterious. I don't know what his motivations are. We met him, but it's still unclear why he comes to the conclusion that he comes.

Greg Dalton: So Bill Nye, you spent some time with him. You go to his home. You hope, you have a glass of wine. You hope that you might be able to bring him around. Did you make any progress?

Bill Nye: Yes, so maybe. Here's what I say, if you meet people, you know, I'm a longtime skeptic, you know, I belong to both skeptic organizations and when someone is first exposed to the idea that astrology may not be true, that there really aren't ghosts, that nobody has psychic powers that enables them to predict with whom you'll fall in love or so on, it takes somebody about two years to come around to that. Like the first time you're exposed to the idea that astrology was made up 2,000 years ago was just sort of shot in the dark and the sun the constellations have shifted, the sun rises in a different place now than it did 2,000 years ago. It takes somebody a couple years to change their mind. So I look at this as chipping away. But part of the -- what's the word, odd nature of the Bastardi family is they invited us what I thought was to dinner at 6:30 PM, 18:30 hours but there was no food, there were no Doritos chips. There was nothing. And I'm not joking you, it was --

Jason Sussberg: He's trying to throw you off of your game. And we're just gonna keep you kind of, you know, hungry and --

Bill Nye: Yeah, so it was weird. It was a weird -- the whole interaction was weird. But I think he equates the idea that .03% carbon dioxide now .0403% carbon oxide, that's the same number as 403 parts per million. Because that fraction is small, then its effect must be small. So he somehow went to meteorology school at a venerable university and didn't understand or it didn't become clear to him the greenhouse effect, greenhouse gases. You know, without this tiny fraction of carbon dioxide there'd be no green plants, there'd be no us. I mean for crying out loud, Joe.

Greg Dalton: Jason Sussberg, one of the interesting points in the film I thought is when you actually got Bill Nye to sit down and talk with Heather Berlin, who's a neuroscientist you kind of got them on the couch with a shrink. And he talks about some of the personal things. Tell me about setting that scene up and was it hard to get them to do it?

Jason Sussberg: Well, so Bill jokingly put his finger to his head like a gun. However, that was Bill's idea was to introduce us to Heather Berlin. Because Heather was doing a research that she stopped and now has since started again that's called your brain on fame. But Bill is a very good sport in letting us, you know, take him through this battery of tests and also sitting through that sort of therapy. But it was sort of a narrative trick to have a real neuroscientist sit across from Bill and sort of interrogate him about his ideas.

Greg Dalton: And Bill Nye, the upshot was that you always had this drive to be famous and yet there are parts of being famous that you don't really like.

Bill Nye: Yeah, so everybody -- the filmmakers got my good friend Steve Wilson rambling and he said Bill has always wanted to be famous. Sort of. What I've always wanted to be is influential, okay. So the fame part I didn't really have worked out, I admit. But it does affect you so Dr. Berlin, Heather, is a neuroscientist and one of the recent relatively recent findings in neurosciences, your brain can change in a way that it's changed enough you can see it on an MRI, a magnetic resonance image. And like it's been shown that talk therapy, sitting and chatting it up with the psychiatrist or whatever it would be can change your brain over the course of a year or two. So I think that's part of her interest, you know, they love their MRIs because it's only in recent times that you could, you know, Sigmund Freud didn't have access to magnetic resonance images. So I think that's part of what's in the background and she did get me talking that's the one part of the movie I just wanna kill myself.

Announcer: You're listening to a Climate One conversation with the science guy Bill Nye. Coming

up, Greg Dalton hears more about Nye's crusade against climate denial and his role in Jason Sussberg's 2017 documentary, *Bill Nye: Science Guy*.

Jason Sussberg: Bill was absolutely instrumental in getting a lot of millennials to take science seriously. We are going to be as Bill says captains of industry one day. We are going to be elected leaders and when that does happen; I think it's trending in the right direction. So I'm hopeful.

Bill Nye: Climate deniers are almost universally older. And when those guys and gals age out, then scientifically literate people will emerge and get to work on climate change very quickly.

Announcer: That's up next, when *Climate One* continues.

Announcer: You're listening to *Climate One*. Greg Dalton is talking to renowned science advocate Bill Nye, and to Jason Sussberg, director of the 2017 documentary about him, *Bill Nye: Science Guy*. Here's Greg.

Greg Dalton: One of the points made in the film is changing the narrative. And as you know the tobacco companies in the 50s say we're not sure, they doubted science famously said "doubt is our product," that was then picked up by the oil companies and lately it's kind of the NFL saying we're not so sure. What do you see is the thread between those narratives and the importance of changing that denial narrative?

Bill Nye: Well the word thread is good because the fossil fuel industry hired the same guys from the cigarette days they're very same people. And the NFL you mean like concussions?

Greg Dalton: Concussions, like people say we're not sure that what causes CTE and there's lots of people out there still playing football when the science is emerging that that's pretty dangerous.

Bill Nye: Yeah, yeah, but I just feel the scale of climate change and the scale of cigarettes is way bigger than head trauma. So, anyway, the thread is that denial or doubt is their friend. So I think what's gonna happen as people come of age, climate deniers are almost universally older that is to say, baby boomers and up. And when those guys and gals age out, can I use that term?

[Laughter]

Then scientifically literate people will emerge and get to work on climate change very quickly. I mean really fast. I think the pendulum will swing back really fast. I think when you have somebody saying there are more people with this inauguration and there were the other one, no there weren't. Like that's not gonna be sustainable as a modern word it just won't last. But the question that I think about continually is every hour of every day is how -- is it gonna happen in time? Where will the curves cross? Will the deniers get aged out fast enough for the climate change embracers let's do something about it to emerge. And that's why you have *Climate One* here we are, way to go.

Greg Dalton: Let's talk about solutions. There's a lot of debate, people think it's so big, what can I do that matters, individual action. Does individual action matter or is it like writing a check to the federal government to pay down the national debt?

Bill Nye: That would work. My claim is if everybody were talking about climate change, if we were talking about climate change the way we talk about what happened in Charlottesville or what happened in Texas, people would be doing something about it. If we were talking about it just everyday. Yes, recycle your water bottle. Don't squander water bottles, don't squander water. Don't leave the lights on. Don't take unnecessary car trips that you don't need to take. Yes, yes, yes, put in double pane, triple pane windows. Yes, yes, yes. But if we were talking about it the way we talk

about these other issues we'd be getting it done. And the evidence for this I present to you comes from my parents and they're mentioned in the film. During World War II, everybody was talking about World War II. That's all they were talking about. The music, the food, everything was about winning the war. And so if we had that same idea about climate change or from my own lifetime, the Apollo program, we're gonna beat these other guys to the moon and that will somehow achieve something. And it did, and the former Soviet Union went out of business, most of it. Some of it's still going. We would be getting it done.

Greg Dalton: But that greatest generation believed in that collective sacrifice in a way that Jason Sussberg, the millennial generation that you're part of, they grew up on Bill Nye, one of the critiques of that generation is that they want all their convenience. They want the food delivered to them. They don't do sacrifice. They think that clicking on an icon on Facebook that that's activism. So tackle that in terms of this --

Jason Sussberg: Okay, I'm gonna be the voice of my generation?

Greg Dalton: There you go, yes. Everybody.

Jason Sussberg: I mean, I just find that to be -- well, first off, give us a second here. We're just emerging, this generation of millennials, we are what 20 to 35; there needs to be some time to see what happens with the millennial generation. I just find that to be old man shaking fist at sky and hand-wringing. If you wanna talk, baby boomers have caused all the problems. So I mean yeah, I think that our generation and Bill was absolutely instrumental in getting a lot of millennials to take science seriously. We are going to be as Bill says captains of industry one day. We are going to be elected leaders and when that does happen, I think it's trending in the right direction. So I'm hopeful.

Greg Dalton: Bill Nye, if someone young like a millennial or below wants to get into a climate change career, what kind of -- you obviously speak to basic science more than applied science thanks to the guidance you got from Carl Sagan. What kind of career path would you say people ought to look to, to kind of really have an impact in their job, not just, you know, as a consumer?

Bill Nye: Well, so keep in mind that I'm an engineer. I mean, I went to engineering school right off. I mean I love pure science as much as the next guy, maybe more. But I became an engineer because I like bicycles and airplanes, they're fun. But there's three things we want for everybody in the world. We want clean water, renewably produced reliable electricity, and access to the Internet or whatever the Internet comes to be called in coming decades. With those three things we could, I believe provide a high-quality life for everyone on earth. In order to provide clean water we're going to need new technologies or better technologies for let's say desalinating seawater. Let's say capturing or the modern word is harvesting rainwater. But for that we're gonna need venture capitalists, we're gonna need attorneys to protect the intellectual property, we're gonna need people to deliver the food to the people working on these things. We're gonna need everybody working together. So let's go. It's gonna be exciting. So one of my favorite stories from my own life is really interesting. I was there, but I was a consultant to General Motors at one point. You know, I do college talks, I do talks to companies, corporations, whatever. And instead of money, I negotiated for the use of the EV1, the electric vehicle one which General Motors called this car they didn't call it the Ventura or the Impala or the Bel Air, they called it The Impact. That's a car, that's not what you want in a car. So the same bunch of guys who were in this meeting, they were almost all men there were two women, almost all men. And, you know, what we want Bill we want our light trucks to be 50% recyclable. No, no, you want them to be 100% recyclable. I sure hope I get a C in this class. So this attitude that we can't do it, I have no time for that. I have no time for that. If you think you can't do it, you sure as hell won't. So let's get to 99% would that be all right? But the big idea --

if you're out there people I see some very young people. Here's what we want you to do. New fuels for jet planes, for airplanes, some new fuel probably won't be algae-based oil probably won't be, maybe. It could very well be hydrogen. So I want you to solve that problem and then whoever else is out here, are there any plumbers here? You guys, I have a solar hot water system on my house. The heat is free. This is not rocket surgery, you guys, it's plumbing in a box and it gets hot and then you need less heat to make it hotter. Can we just do that, let's go. Let's get it done out there.

Greg Dalton: Let's talk about food and the importance of food. People think that lot of climate is really abstract. How important is agriculture and food in making the kind of changes that we want to make for climate?

Bill Nye: There's no connection at all. What do you want; of course it's like huge!

Greg Dalton: Explain your conversion. There's a podcast on that in the program.

Bill Nye: Oh so, my claim, my belief is, was that you can't know the ecosystem that you accidentally do something to crops that would create a superbug, you'd create some virus that you couldn't anticipate and stuff. But after I did two things, I went to Monsanto itself -- oh I went to Monsanto, oh my God, in St. Louis. I decided they really could tell. They really can tell what genes are going to do and they really are diligent about monitoring the crops and keeping so-called sterile refuges. They're really into it. They're very, very careful about it, but Monsanto has a terrible reputation I think for two reasons. First of all they used to make Agent Orange which you guys are of an age Vietnam war, they would denude Vietnam in the hopes of making battles more successful, but it had this horrible knock on affected gave these people horrible disease. I guess it was cancer related thing. And then why didn't the, not just Monsanto but Pioneer, DuPont, Syngenta why didn't all those guys come out proudly GMO. Check us out, our corn is even better. Why didn't they do that? I know they're not that great at public relations they weren't. Then the other thing I'd say you guys that climate is changing, crops are going to move north from North America, they're gonna move into Manitoba, Saskatchewan, Alberta maybe and we're gonna be ready for that. The problem is the speed. It's the speed that these things are happening. And so with modern genetics they are, they, agricultural scientists, agriculture geneticists, are able to anticipate changes and make crops that are more drought resistant or more flood resistant or literally more wind resistant, just amazing. And so there's something to it. And then on the Bill Nye Saves the World show we had the mythic guy from Monsanto, Robb Fraley. We had a farmer, a woman from Iowa who says she's ninth generation farmer and a guy from the Department of Agriculture. And everybody agreed that genetically modified food has a place, it does not solve all your problems, but it has a place.

Greg Dalton: I think some of the critics of GMOs are more concerned about industrial monoculture, the massive use of glyphosate. It enables, it's not just the GMOs themselves it's the other things that it enables.

Bill Nye: Well, so you guys as far as herbicides if you like herbicides, who doesn't? Glyphosate is actually pretty benign compared to some of the stuff.

Greg Dalton: Even though the state of California has listed it as a carcinogen.

Bill Nye: Well it may be. And my understanding is, it may be. I'm not an expert on that but compared to a lot of other stuff it's not as bad as other things. And another big idea you guys -- okay, don't shoot the messenger. But something to keep in mind is farming is not natural. You know, if you stop farming, nature goes back to forest or prairies or whatever it was. And that's sort of a big idea that I think people lose sight of, without humans just going crazy, you would not have a farm, you could certainly not have 7.4 billion people eating around the world. But the other thing I did, I

went to the Monarch Venture. So this is kind of a hippie titled thing it was held in Minneapolis. So they got people, the corporate pigs, Robb Fraley and people from DuPont from Pioneer seeds and the people that monitored the flight of monarch butterflies. And they got them all together and the farmers and the cowboys should be friends, I'm sorry. They got them altogether and they decided that if they had milkweed which I like to call milk flower. It may look like a weed to you and me, but to a monarch butterfly it's their sustenance, it's what they gotta have. If they had these patches of milkweed along the fly ways, which is a cool word where the monarchs make their highway in the sky, then they could sustain large populations of monarch without screwing up farms very much because farmers don't like milkweed, it takes over everything. And it's worked, the last three years the monarch population has gotten bigger. But three years is not much of a sample size so stay tuned. Is it because of El Niño, rainfall or is it because of the refuges. But here's what I'm saying is, everybody acknowledges there was a problem with the monarch populations going down. And everybody both the hippies and the corporate pigs wanted to do something about it. So that was really moving for me, I was really impressed with that. I paid my own way you guys.

Greg Dalton: Speaking of the severe weather, I'd like to get you a couple explainers because you're known as the great explainer. Starting with the fires. What is the climate connection with the fires in America?

Bill Nye: Oh so it's big rainfall in the spring then it got really dry and super hot in the summer. So when things started burning, there was a lot of fuel. And man, how many people were not affected by the fires, yeah, everybody was affected by the fires. Everybody either was had their lives destroyed or that you know somebody that his life or her life destroyed.

Greg Dalton: And Hurricane Harvey, Irma, Maria --

Bill Nye: Nothing to worry about. Everything is fine.

[Laughter]

So there is everything all at once. You know, it's never, as we say in airplane crashes, it's never any one thing. So Houston has all this hard scape, huge fast fastest-growing large city in the U.S. maybe in the Western Hemisphere, some crazy statistic like that. And so there's all this asphalt so-called sealed roads or waterproof roads and when it rained and stayed there the problem just got worse and worse and worse. So my understanding is after Hurricane Katrina, people's houses were flooded and ruined and they lost everything. And if someone had gone to those people they interviewed people and said okay, here's half the value of your house and everything you own, would you abandon your house. Everybody said, yeah. But after it drains and there is no relief and you can't sell it, nobody wants to buy your soaked up house, you just stay so then the problem happens again. And I wonder all the time is there gonna be a future. People just start leaving Houston, Corpus Christi, Pensacola, Miami, Miami Beach, those are two different cities just start leaving and then somebody going to go to New Orleans, is somebody gonna go in there and try to salvage all the copper plumbing and wire? I mean is there gonna be salvage business we haven't even thought of yet, wow. So the speed, that's the problem.

Greg Dalton: And so that's really dark. How do you stay motivated, try to like --

Bill Nye: Oh because, oh man. So who is from Iowa? Anyone from Iowa?

Greg Dalton: No hands.

Bill Nye: Iowa gets 25% of its electricity from the wind competing head-to-head with oil and gas. A

friend of mine lives in Coweta, Oklahoma, suburb of Tulsa. They have earthquakes. They don't like earthquake and it is from fracking. It's just like nobody thought you could frack to the extent that you'd have earthquakes like magnitude 5 like real things and nobody wants that. And then Texas in the springtime gets 10% of its electricity from the wind. Now, I'm not saying the wind is the whole answer but it just shows you what's possible. Oh the other thing, young people, transmission lines better electric power lines. I mean what we have doesn't suck but we can do way better. I'm sure of it. So the jet fuel, transmission line, solar hot water. Come on man, let's go. This will be cool! Let's make changes!

Announcer: Greg Dalton has been talking to Bill Nye, subject of the 2017 documentary Bill Nye: Science Guy, about the state of climate science and how to save the planet. To hear all our Climate One conversations, subscribe to our podcast at our website: climateone.org, where you'll also find photos, video clips and more. If you like the program, please let us know by writing a review on iTunes, or wherever you get your podcasts. And join us next time for another conversation about energy, economy, and the environment.

[Applause]

Greg Dalton: Climate One is a special project of The Commonwealth Club of California. Kelli Pennington directs our audience engagement. Carlos Manuel and Tyler Reed are the producers. The audio engineer is Mark Kirschner. Anny Celsi and Devon Strolovitch edit the show. The Commonwealth Club CEO is Dr. Gloria Duffy.

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