OPEC Oil Embargo +40

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Greg Dalton: Welcome to Climate One from the Commonwealth Club of California, a conversation about America's energy, economy and environment. To understand any of them, you have to understand them all. I'm Greg Dalton.

Today, we're discussing the 40th anniversary of the 1973 oil crisis. Our guests are former Secretary of State, George Shultz; and former CIA Sirector, Jim Woolsey.

On October 1973, OPEC announced an embargo on oil exports to the United States in retaliation for American support of Israel during the Yom Kippur War. The use of oil as a weapon sent shivers to the global economy and plunged the United States into recession. The federal government rationed gasoline and motorists across the country waited in long lines to fill up their tanks.

Over the next hour we'll look back at the 1973 oil crisis and look forward at the future of oil in the age of climate disruption. Our conversation will include questions from our live audience at the Commonwealth Club in San Francisco. We're pleased to have with us two American statesmen. George Shultz was Secretary of the Treasury under President Nixon and Secretary of State in the Reagan administration. Jim Woolsey was Director of the CIA under President Clinton and Undersecretary of the Navy in the Carter administration.

Please welcome them to the Commonwealth Club of California.

[Applause]

Greg Dalton: Secretary Shultz, Mr. Woolsey, thank you for coming. George Shultz, let's begin with you, 1973 or with the beginning of the oil embargo, you were in the Nixon administration. Tell us that story. How did that unfold?

George Shultz: I was secretary of labor in 1969 and for some reason the president assigned me the task of chairing a cabinet taskforce on the oil import program. President Eisenhower had thought that if we imported more than 20 percent of the oil we use, we're asking for trouble, a national security term. So we had a quota system and we were coming up against it. So I had this. It was interesting. Secretary of Labor has a taskforce with the Secretary of States, Secretary of Treasury, Secretary of Defense, all these big guys not exactly working for me but in my taskforce.

And we managed to get a really brilliant staff and produce an excellent report that was published. And we said, this was in 1969, that the problem wasn't so much a military problem as it was. The instability in the Middle East is produced by the tensions between Israel and the Arabs. That was the issue. And so we said we should restrict our imports from that part of the world. We should have some storage facilities so that we have some backup. It was obvious — seemed obvious to us that there were resources up to the north of us and they should be looked at.

So all these things we recommended. The president patted me on the head and said, "Good report." We had hearings but nothing was done. Nothing. So I learned a lesson. It's very hard to get anything to happen just on the basis of your analysis of something, even though when it seems perfectly obvious. But also I had in my taskforce staff people who came to it because they were interested in

environmental issues and so on. And I got — so I knew a little bit about that.

So a little while later, I'm the first director of the Office of Management and Budget (OMB), and President Nixon signed the legislation that created the EPA. And when a new agency is created, they have nobody to represent them and they are going to get facilities from other places and people from other places. So if nobody represented, they're going to get a bad deal.

So the Director of OMB becomes their representative but we're pretty good representative because we know where the bodies are buried but nobody wants to mess with the OMB. So I hand in creating the EPA and I watched it over the years, and it seems to me it has proven itself as a very useful nag to keep after us, and we have better, cleaner air, cleaner water. You would much rather breathe the air in any American cities than breathe it in Beijing. Thank you, EPA.

So then I become Secretary of the Treasury in, as you said, on come the Arab oil embargo and there's no energy department so the Secretary of Treasury becomes the de facto Secretary of Energy. I might say in our report we had said, "Somebody should be paying attention to this subject and they would have something creative to do that."

But anyway, in that setting, things did start to happen. We did create a petroleum reserve. We changed the method of the quota to a tariff system and we became more conscious of the issue. People would come in and tell me about ideas they have for alternative energy, that's interesting but far away but encourage them. But then I saw when the crisis passed, everything stopped. It's hard to keep the moment I'm going without a crisis. So all of that I saw.

And then if I could continue the story, a few years later, I'm Secretary of State. And as what's referred to in the morning conversation, we had the ozone layer issue and a bulk of scientists thought the ozone layer was depleting and as of now, they were doubters. However, they all agreed that if it were to happen, it would be a catastrophe.

So President Reagan said, "We better have an insurance policy." And we started to work and the work was not make a pledge for how much you can do about the ozone layer, the work was, what can you do about it? Let's focus on practical things that somebody might actually do that will make a difference and the outcome of that was the Montreal Protocol, which I think is the only environmental treaty that's really worked. And I think the lesson I draw from that is, focus on things you can do rather than objectives you want to attain on your life to get further.

So that's what I've learned from my experiences in these various offices.

Greg Dalton: Jim Woolsey, would you evaluate the American response to the oil shock of 1973? How did the U.S. deal with it? What lessons and what did it do well or not so well?

Jim Woolsey: Well, first of all, I think George is completely right and let me put a glass on it that I think helps answer the question. Crises are not enough. Whether they're potential crises or existing crises, people will ignore them after a little bit of time. We had a crisis 40 years ago as George described.

President Carter later did move to a situation in which we got ourselves largely out of the business of using oil to produce electricity. We used to produce about 20 percent of our electricity from burning oil. We moved away from that because we had alternatives. Unfortunately, the alternative that was utilized most heavily, at the time, was moving toward coal but we did move toward natural gas.

To some extent, there were other ways to produce electricity than oil. So as that competition came into effect, oil began to lose and we went down from 20 percent to 1 percent of our electricity coming from oil. What made that possible was that there were realistic competitors to oil.

Today, we made different ones of us be motivated by different crises. One, for example, is a perpetual mess that is the Middle East. And you can attend seminars, and you can read books, and so forth, and a lot of things we really ought to do in order to avoid being in the hands of the chaos of the Middle East. And you can convince people of that and talk to them and write books, and after awhile, some people would be persuaded. My estimate is you're going to have a substantial impact on something like 10 percent, 15 percent, 20 percent of intelligent people.

Or you can say the real crisis; forget about this politic stuff, the real crisis is climate change. We know it is happening. The results can be absolute disastrous and you can write books and you can give speeches and you can go to seminars and something on the order of 10 percent, 15 percent, 20 percent people will say, "Hey, that's really a crisis. We got to do something about that." And then the same sorts of things will happen that George described.

I have an increasingly, I think, attitude toward how to do something in these areas that starts with the famous line, "follow the money." You're not going to make a major change such as getting the United States out of the business of producing electricity by burning oil unless there's something that is technologically and financially better.

Now if we try today, whether because of national security, because of climate change, because of whatever, to operate without focusing on the money, we will lose. What we have come to over the course of the last 15, 20, 25 years, is a view that all we really have to do is change where the oil comes from. And if we are getting oil from a nice country like Canada or Norway then probably things are not too bad if we're getting from a country that wishes us ill like Iran or Venezuela. Things are really bad.

And so we are in a mode of thinking that if we drill and get the oil from the United States and you can do it in a reasonable fashion like ecologically, then that's so much better than getting it from someplace else. But if you don't also look at the money, you will not get accomplished what you want to get accomplished. People talk about energy independence.

Well, what they usually mean by that is energy autarky. They mean stay away from trade. Don't buy stuff overseas that you can produce here. But Thomas Jefferson did not draft the Declaration of Autarky. We are not about autarky. Trade is a very important part of what we do, including trading hydrocarbons. But what we have done by interpreting the notion of independence to mean get it domestically instead of importing it from someplace else. We've done virtually nothing successful in this way.

Now improved production of oil domestically, I think, is a good idea, again, if you're doing ecologically sound fashion improves your balance of payments, improves employment at refineries in Texas. That's all good but it's not the main thing. The main thing is the price and who controls the price.

Look, Britain, in 2008, when oil hit $147 a barrel was "energy independent." Britain had all the oil that it needed for what it could use from the North Sea. It had coal. It had nuclear and the natural gas. Britain could have seceded from the world markets, set itself up and been energy independent. But what was oil going forward in Britain in '08? $147 a barrel just like it was every place elsewhere

and Britain did not secede from the international trade or anything else like that.

What would make a difference? Supposed Britain or the United States had policies as sound as those of Brazil, China and Israel so that you could pull in to a filling station and choose there what you wanted to drive on. You didn't have to get permission from any good bureaucracy. You didn't have to get permission from a cartel like the one that runs the oil market now, OPEC, you just chose and you drove off.

In Brazil, it's ethanol because sugar cane is great down there and it all fits. The Israelis are moving toward the second fuel being methanol with an M, in other words, cleaning fluid not vodka or whisky. Those countries are starting to make it possible to pull into a filling station and decide what you want to buy. And what they're finding is that cleaning fluid, methanol with an M, is a good deal, cheaper and seems to drive cars just as well as gasoline.

And so in 20 of China's 27 provinces, they are moving rather decisively toward being able to choose at the pump. Follow the money. At some point, when somebody can do what we did with coal and oil in the end of 60s, beginning of the 70s, when they can start shifting on grounds of price and the technology working, at that point, we will win over oil and I think not before.

George Shultz: But, Jim, doesn't this say that actually the solution to our problems is easy? Just follow the insurance policy concept that Ronald Reagan used with the ozone layer. What are the insurance policies? They're pretty clear.

Number one, let's have every new automobile produced in the United States be flex fuel, as Jim suggests.

Jim Woolsey: Bingo.

George Shultz: So you do that, you made a step. Not even very expensive to do that.

Jim Woolsey: Ninety bucks a car.

George Shultz: Number two, let's maintain on a sustained basis the support for energy R&D that's been going on now for four or five years. Usually, it drops away when prices of natural gas or something go down. That happened.

Actually, the amount of federal money involved is peanuts, which not even in the rounding error so now running about $8 billion or to get up to $12 billion or $15 billion. But it's also true, at least as I am familiar with what's going on at Stanford University, at MIT, that this money attracts private money.

And actually at MIT and Stanford, most of the support or both of the support comes from private parties or instantly finding out what's going on and both those institutions welcome it because these are the people who could come up with something, who know how to scale it and get it to market and make it useful. So keep that going and then let's have a leveled playing field. So, all forms of energy compete on an equal basis.

Jim Woolsey: Absolutely.

George Shultz: Not subsidize anybody but everybody should pay their full cost and carbon is a cost. So the forms of energy that produce it should be charged with the cost of what they are producing.

My nomination would be a revenue-neutral carbon tax.

And so you put people this is not a subsidy to anybody, it's just creating a leveled playing field so everybody competes on the same basis and I try to make it revenue-neutral so that people who don't want to raise taxes, I'd say, "Look, it doesn't raise money. It's not a tax. Come on. Let's go with it." So if you just do those three simple things, you're in business.

Greg Dalton: On this anniversary of the oil embargo 40 years ago, having two guests here who served in four presidential administrations, we put together a brief video that shows every president from Nixon to Obama talking about this and we'd like to show that. Listen to this and then we can comment on it.

"The average American will consume as much energy in the next seven days as most other people in the world will consume in an entire year. And until we provide new sources of energy for tomorrow, we must be prepared to tighten our belts today."

"And the 1973 embargo helped to throw us into this recession. We cannot continue to depend on the price and supply whims of others."

"In our dependence on foreign oil will be stopped dead in its tracks right now."

"We will continue supportive research leading to development of new technologies and more independence from foreign oil."

"Before the Iraqi invasion, U.S. imports had risen to nearly eight million barrels per day. And we'd moved in the wrong direction. And now we must act to correct that trend."

"I recommend that we adopt a Btu tax on the heat content of energy as the best way to provide us with revenue to lower the deficit because it also combats pollution, promotes energy efficiency, promotes the independence, economically, of this country."

"And here we have a serious problem: America is addicted to oil, which is often imported from unstable parts of the world."

"We have known for decades that our survival depends on finding new sources of energy. Yet we import more oil today than ever before."

Greg Dalton: So a lot to react to there. That's presidents from Nixon to Obama talking about foreign oil and energy independence. George Shultz, I'd like to ask you, President Clinton proposed essentially a carbon tax 20 years ago. It's hugely unpopular. His party suffered a big defeat. Do you think the politics are now different? What would it be if that perhaps have been passed 20 years ago?

George Shultz: I don't know but I know from experience that opportunities come, you never quite know when. And if you're ready and you've got something there, you can take advantage of it. And if you're not ready, it goes and you never know.

So I think it's good and you'll find a lot of consensus among economists that recognize we're not powerful, we're just thinkers but a lot of consensus among economists that the right way to go about this is a carbon tax. That's following the money in a way and it also is not, as Jim was pointing out, it isn't simply producing our own oil or independence in that sense, the point is use less of it and then

we're going to get somewhere.

Greg Dalton: Well, President Nixon said we need to tighten our belts.

George Shultz: Well, that's right. But the only thing that we've done about it is let the prices go up and that has caused people to use less of it and look for alternatives.

Greg Dalton: Jim Woolsey, there's two ways to do this to make dirty energy more expensive or make clean energy less expensive. Secretary Shultz is saying making brown more expensive or internalize the cost. What do you think?

Jim Woolsey: Well, I think things would move faster with George's idea of a carbon tax and that would be fine with me. But one looks at the continual resistance to added taxes and especially the circumstances we're in now, I think we got to at least consider how you might accomplish this without the need for an added tax. And one way to do it is simply to let the market work and to avoid not only subsidies for ethanol but also the subsidies that have been in place for many decades for oil such as a depletion allowance and the intangible drilling cost and so forth. Complete leveled playing field.

Under those circumstances, we're in a new world over the course of the last five years to where we were before with respect to what energy costs. Because a marvelous oil man dies just a few months ago in Texas, the same name as the Senator George Mitchell, put for the first time together hydro fracturing and horizontal drilling.

And as a result, natural gas today in the United States is one-fifth the price of oil per BTU. What that means is if you're going to make a chemical out of natural gas, if you were going to do it five, ten years ago and compare it to making it out of oil, you're kind of using roughly the same priced feedstock and furthermore that some things are a little bit harder to do with natural gas.

But if fracking has produced a situation where you are not — you have a separate pot of feedstock and it cost one-fifth what oil does, you can make not anything exotic, you can make something like methanol which is half of the cleaning fluid in your windshield wipers. It's just methanol is in buck ten a gallon at the local hardware store. Cars run on it fine. Indianapolis 500 run on methanol for as long time.

If you have something that wins on price in today's market, wouldn't win as well as if we had a carbon tax but still wins about two-thirds the price per mile for a methanol compared to gasoline. Oh, by the way, gasoline what the oil companies did for is when they got rid of lead to get the lead, the carcinogenic lead out of gasoline, they substituted for it carcinogenic benzene, toluene and xylene. So we come up with a new way to give ourselves cancer from the fuel that we drive on.

So you have some added benefits by moving away from gasoline and toward something simple like methanol with alcohol made out of natural gas. Once you've done that, you've taken a big step, not as full as you would if you also had a carbon tax, but you've taken a big step toward making it possible for people to drive at less cost, about two-thirds of the cost per mile, that you have with today's gasoline. And that is not a small matter.

Greg Dalton: If you're just joining us on the radio, Jim Woolsey is former Director of the CIA. Our other guest today at Commonwealth Club is George Shultz, former U.S. Secretary of State. I'm Greg Dalton. Secretary Shultz, how would hydraulic fracturing for natural gas affected geopolitics of oil and the Kingdom of Saudi Arabia?

George Shultz: Oh, we're producing more natural, more hydrocarbons here in a large way, including oil as well as gas. With this technique that Jim described, is applicable elsewhere not just here. And I think one of the most intriguing places is China because China has shale deposits that exceed ours as I have been told and they think they're inaccessible.

Well, ours were thought to be inaccessible until this entrepreneurial guy, George Mitchell, came along and figured out how to do it. It's interesting that these innovations usually come from little guys who are entrepreneurial and driven rather than the big fellows. So I think we ought to go to China and say, "Hey, we'll make a deal with you. Let some of our entrepreneurial guys come over and join some of your little guys and see if we can figure out how to put that shale to use."

China's oil industry is dominated by three big companies and just like here the big companies, with all due respect, I don't do this kind of things. So let's see if we could get China to develop its shale. And if so, all of a sudden, their demand elsewhere will go down. They'll make a big contribution if they have a lot more natural gas to use instead of coal following the money, as Jim said, that that's substitution. It will have a big impact on the greenhouse gas business and begin to get somewhere.

Greg Dalton: I'd like to shift to the consequences of burning fossil fuels, the climate consequences. Secretary Shultz, is climate change real? Are humans contributing to it?

George Shultz: Well, I think so. There is all this science that people talk about and report on that personally I think is impressive. But if you don't like the science, use your eyes. A new ocean is being created in the Arctic. That hasn't happened since the last ice age. Something is going on.

So I think it's pretty clear that the climate is changing and there are all sorts of indications but that's a dramatic one and there's something else about that. There's a video I've seen. It shows the disappearance of sea ice in the Arctic. It goes along very gradually and about 10 years ago, there's a discontinuity and the thing that we have to worry about are the discontinuities and there are all sorts of things you can point to as potential sources.

So we are going along. It's very gentle and we hardly notice it but all of a sudden, you may hear something that happen that brings us sharply into a different kind of era. So I believe that we should be coming back to that. We should be taking out a strong insurance policy.

And as we pointed out, it's not even that expensive. Flex-fuel vehicle doesn't cost anything much. Keep the R&D going strongly, put a revenue-neutral carbon tax or not even a tax that doesn't think anybody, and let these entrepreneurial people get around. Following the money, people doing what make sense. You'll get somewhere.

Greg Dalton: That view is not widely held in the Republican Party. What's the scenario for the Republican Party to get on board with the things you just said?

George Shultz: Well, one may point out to you that it was a Republican president that created the EPA. It was a Republican president did the Montreal Protocol. It was a Republican president that did the cap-and-trade system that dealt with acid rain so the party that has done something. And having been involved in some of those things, I might say they were never done on a partisan basis. They're always done on a reach out and let's do this together basis. So I think there's a fundamental thing wrong in our country these days, isn't it? Everything has to be done on a basis where you bring the other guy for something that they're not sick of it frankly.

[Applause]

Greg Dalton: I read an article in Politico recently that said, "Looking for a Rob Portman of climate." Rob Portman is a Republican senator from Ohio, came out in favor of gay marriage at a time that it was very unpopular in his party. He had a gay son but he came out all the way things were going. Is there a potential for a Rob Portman on climate to come out and say, "Look, this is the way the party should go."

George Shultz: I think what we have to do is to say a line of reasoning that Jim said, follow the money and also follow security. We got to find things that improve our security, make economic sense and deal with this kind of issue together. And those things can be found by the sort of things that we're talking about. I might say, in addition to sort of the broad security in the international sense, I think we're very vulnerable in this country because our grid vulnerable.

We've seen that when we have natural disasters such as Sandy. But if you listen to these people who know something about cyber matters which I've been doing lately and that scare the daylights out of it because it's pretty easy to disrupt our grid. So you better have energy created where you use it and there are all kinds of ways of getting at that if we will get at it. So I'm a believer that we should identify problems and start doing something about them, not talking about them.

Greg Dalton: Jim Woolsey, you have an example of grid vulnerability, I'd like you to talk about in San Jose that happened that it hasn't received very much attention.

Jim Woolsey: Well, you can have a very vulnerable electric grid for a number of causes but one that happened just outside San Jose back last spring, the day after, actually the bomb detonation in Cambridge, Massachusetts on the day of the marathon. This was captured most of it by a film at an area where there were some 20 relatively large transformers supplying much of the electricity for Silicon Valley.

There was a video of a group of three or four men driving up in the middle of the night that 2:00 or 3:00 in the morning having a tool with them that helped them lift a very heavy 250-pound or so manhole cover off to go — and several of them, two of them anyway, went down into where all the wiring was and clipped all of the wires that would make possible 911 calls at least on the landlines. Deployed with AK-47s, several of them and lined up in a disciplined way, and began systematically shooting the transformer fans.

Now, they did not have I suppose armor piercing rounds so they were not shooting the transformers themselves. That would take a transformer out for many months. They've shot the fans, which took them out for some period of time. And from what I hear, they got 17 of the 20. Then an outlook that they have posted in very disciplined military fashion saw that a car was coming, maybe somebody who had called on a telephone because we heard gunshots. They quickly and professionally disposed of everything they had, except threw in the car that was with them and except the brass which they left which is how people knew they were using AK-47s.

They disposed of that except for the brass. They got everything with them. Got in the car, got away before I believe it was the highway patrol vehicle showed up. The people in the vehicle didn't know anything about transformers or had met anything that there were pools of oil and so forth around them. And so they just went away.

And then a few hours later, the electricity was not fully coming as much as it should, and some representatives from the company from the utility came back saw what had happened, called it in.

People looked at it, steered around. There was one very small story in the San Jose paper. The state police or the FBI, one of the two, said that they thought it was just hooliganism. The sheriff, a woman of the San Jose area said this wasn't hooliganism; this was a systematic attempt to take down the electric grid.

Greg Dalton: Of Silicon Valley which would have huge economic impact?

Jim Woolsey: Right. If they were only shooting the fans, then they might be able to get back up relatively quickly had they been shooting the transformers themselves, it could be months. Something very similar to this happened in Arkansas a couple of times during August and there's been, I think, an arrest of at least one individual involved.

If you jump from that to solar coronal ejections caused or huge sandstorms sometimes called Carrington events because named after a scientist. But the point is that those can take out huge sections of the grid and not with anybody planning it, just with basically a gigantic sunspot. So there are — the grid is very vulnerable. It's vulnerable to malicious and it's vulnerable to chaos and we have not done anything useful to protect it or make it hardier or more resilient really ever.

From the mid-to-late 19th century, when the grid started being put together in the 1880s until today, we have basically sort of looked at the problem and rung our hands. When somebody would say, "Why don't the utilities fix it?" Well, the deputy director of ARPA-E, the Advanced Research Projects Agency for Energy and the energy department told me the other day that for the 3,500 American utilities, they spend less each year on research and development than the American dog food industry spends on R&D.

Greg Dalton: One other vulnerability of climate impacts is integration. I'd like to talk a little bit about how immigration and displacement of people could affect the United States among the border. Jim Woolsey?

Jim Woolsey: Yes. One of the really troubling situations, I think, is the glaciers in the Andes and I want to start seeing those melting have sporadically with the course of the last several years. You have a situation in which hungry and thirsty neighbors south of us could need or feel a perfectly reasonable need to come north to find food and water. And if we think we have political and economic difficulties figuring out how to deal with the immigration issues now, just wait until the situation in the glaciers in the Andes which is where people in that part of the world get most of their freshwater is rather very troubling.

Greg Dalton: Secretary Shultz?

George Shultz: I'd like to make a comment that's not — but not exactly but on the immigration issue that we have right now. If you look at fertility in Mexico, it goes like this.

Greg Dalton: Downward.

George Shultz: Very sharply. So that now fertility in Mexico is down to replacement level and probably go a little below. Mexico is successful in the kind of energy reform they're talking about. It's going to wind up having a very strong economy. It shouldn't be surprising that the net immigration of Mexicans to last year was zero. Actually, more U.S. went to Mexico than the other way around.

So we are worrying about the wrong border. We would want Canadian eyes than Mexican border.

The border we should be worrying about, including what you're talking, is Mexico's southern border not the southern border of North America and help Mexico avoid becoming a transit country with all of the human degradation and corruption that go through that.

And Washington didn't get it. They're worrying about the wrong border. They're putting up big things and so on that keeps Mexicans out will be pleading for it. Seventy percent of the people who work on U.S. farms are immigrants. If we didn't have them, we'd be starving. Give me a break.

Greg Dalton: George Shultz is former U.S. Secretary of State.

[Applause]

Greg Dalton: And our other guest today at the Commonwealth Club is Jim Woolsey, former CIA Director. I'm Greg Dalton. U.S. and China emit most of the greenhouse gases in the world, 30 percent, 40 percent. Secretary Shultz, you were very active in the bilateral talks with the Soviet Union, did a lot of things, could the U.S. and China get together on a bilateral way and solve the climate carbon problem in a way that the U.S. and Russians did during the Reagan administration or other periods?

George Shultz: Well, I think the way to get after carbon problem is not the way we're doing it, but to do along the lines of suggesting. We ought to identify things you can actually do that make sense and then we should work with China. Say, "Here's what we're going to do, how about you?" I mentioned the example earlier of helping China develop its shale so it has more natural gas. That would be a very helpful thing but there's this huge amount of research going on.

Solar panels are very competitive right now and China is producing them and using them. But they are very competitive and it's also true that a big fraction of the costs are installation cost. So I'd say to these guys, "Why I should design something that's easier to install. You knock the daylights out of the cost." So things are becoming economic.

Batteries are getting better and better. And there's a scientist down at Stanford that thinks he has figured out who's getting toward improving the capability of a lithium ion battery maybe by four or five times. And if he can pull that off, think of what that does to the range of an electric car. So these are things you can do on the question of energy created where you use it.

There's a company down in Silicon Valley that's figured out how you configure fuel cells and was sized like the size of a pickup truck. Put natural gas over it and it will produce electricity. You can park it anywhere. And I keep telling him, "You ought to think about hydrogen because there are scientists working to figure out how you get the hydrogen out of water inexpensively."

And then if you put hydrogen over your fuel cell, you'll never get electricity, you get potable water, which is handy in many cases. So I just think there are lots of things that are being produced that you can actually do. And rather than have — our objective is to reduce greenhouse gases by X percent. That's our objective is to put into effect A, B, C, D and then things will start to happen.

Greg Dalton: How many electric cars do you own?

George Shultz: Two.

Greg Dalton: What are they?

George Shultz: Well both of these are on lease. I have one down at Stanford. I have electric panels on the roof of my house down at Stanford. I put them in about six years ago. If I did it today, I'd get much better ones.

But anyway if I compare my electricity bill before and after, I more would save all the money that it cost me to put them in. When I'm driving my electric car, I produce way more solar electricity than I use in that car. So I'm driving on sunshine and guess what? It's free and there's plenty of it.

Jim Woolsey: And this is –

George Shultz: And my wife has one up here in San Francisco and she drives around the hills of San Francisco where the electricity comes from. It's not like the solar I have down there. But anyway, it's a great car.

Greg Dalton: It comes from fog. Jim Woolsey, you also have an electric car?

Jim Woolsey: Yes. I was going to say and this is in many things following George Shultz has a very good idea. Sue and I have a Volt. I have also a Prius that have a five-kilowatt hour battery added to it. It gets about 20 miles all electric. The Volt gets 35 to 40 miles. We have a geothermal heat pump in the house. We have wind-powered down at the dock to raise and lower our boats. And we have a solar on the roof and batteries in the basement.

George Shultz: Not a bad set: two cars, a boat, that's a life.

[Laughter]

Greg Dalton: We're going to invite your participation here and put a microphone up here and invite you to come around. Again, the line forms with our producer, Jane Ann. I encourage you to have one-part question or comment to join us for those engaging part.

Let's go to audience questions. Welcome to the Commonwealth Club, a question for George Shultz or Jim Woolsey.

Dave Massen: Good afternoon. Dave Massen, Citizens Climate Lobby.

George Shultz: Speak up. I can't hear you.

Dave Massen: Dave Massen, Citizens Climate Lobby. Good afternoon. Secretary Shultz, we are lobbying Congress for a revenue-neutral carbon tax. We really appreciate you're talking about it. I'd like to follow-up on a question that Greg asked you about how to get Republicans and Congress onboard of this idea, and I'd like to ask you about a piece of our campaign logic and that is –

George Shultz: Ask me about what?

Greg Dalton: Campaign logic.

George Shultz: Oh.

Dave Massen: We are thinking that as the president comes out with more and more direct regulations from the EPA because Congress has failed to act, which he has threatened to do and he did do last June with the new coal plant regulations that more and more regulations which

Republicans really don't like would encourage Republicans to think about a market-based carbon tax. Do you think that's a good piece of campaign logic for us?

Greg Dalton: Is there a political opening for carbon tax with so much regulation going on?

George Shultz: In my experience in government is when you say to the Congress, "Look, if you don't do what I want, I'm going to do it anyway," you lose. Congress has the power of the purse. They can shutdown the EPA tomorrow. They don't have to shut down the whole government to do it either.

So the way to get something done is to reach out to people and include people. And I might just go back to my Ronald Reagan insurance policy approach. We said to the people who were doubters about the ozone layer, "Okay. We respect your point of view but you also agree that it would be a catastrophe if this happened so let's agree on an insurance policy." Reach out and include people.

Now on the revenue-neutral carbon tax, what may happen? I don't know but one of these days we'll get tax reformed. Everybody agrees it's overdue and needed. So sooner or later they'll get around to it. And in that context, you just might be able to get something particularly if you stick with the idea of having it revenue-neutral so it isn't a drag on the economy. So I'd say be ready, be watching for opportunities and maybe we'll get somewhere. But I don't think the bludgeon of regulation taken against the Congress' wishes is likely to get you very far.

Greg Dalton: We talked earlier about fuel competition in markets, particularly for transportation fuels, and one proposal that's been introduced is something called the Open Fuel Standard where there would need to be competition for fuels that go into an automobile. Republicans like markets, competition. Could that be something that would bring people together?

George Shultz: Absolutely. Well, Jim has talked about this, the flex fuel vehicle and I think there's a lot of support for that in the Congress, on both sides.

Greg Dalton: Jim Woolsey?

Jim Woolsey: We have an organization that Rob McFarlane and I started a couple of years ago. It's called U.S. Energy Security Council and it focuses very heavily as does the Fuel Freedom Foundation, which we work with on a flex fuel and making it possible in one of two ways to get flex fuel vehicles without having to order it done. One of the cleverest, I think, is that Gal Luft and Anne Korin who have written several very fine books on these subjects came up with which is instead of mandating that half of the cars or whatever have to be able to use let's say gasoline, ethanol and methanol.

Say, "All right, as long as you have more — if you have gasoline and ethanol being able to use in the, you've got at least one more fuel. But whether its methanol and electricity, as long as you've got multiple fuels, at least three in one case and two otherwise, you get an added CAFE credit for your fleet of vehicles."

So if you're an American automobile producer and you're sitting there really worrying about how you're going to get to 54.5 miles per gallon CAFÉ in the coming very few years, and you should be worried because it's not going to be easy at all to do. What you say is not car-by-car but, "Mr. American manufacturer, if you will have half of your new vehicles flex fuel, we'll give you an added four miles per gallon for your entire fleet in CAFÉ credits." The CAFÉ works this kind of an operation also works to clean up because methanol, for example, has much less carbon than

gasoline.

So you have credits that are going to improve the ecology and at the same time you are creating competition between fuels so people can pick he cheaper winner and pick whatever they want. And I think there are different ways to do this but you're talking about to have a car that you make some kind of change to in the production process to let it drive on gasoline, ethanol or methanol. The cost of that is $90 per car. That is half a seatbelt.

Greg Dalton: Are the oil companies fighting this?

Jim Woolsey: Humma, humma, humma is kind of what they say right now. It's a little hard to tell.

Greg Dalton: Which means, yeah.

Jim Woolsey: We'll see. We are hoping to bring some of them along. We're starting to work on this. But I wouldn't say I could characterize them either as helpful or as fighting right now. I think they're trying to decide exactly how to deal with it. Car manufactures tend to.

George Shultz: They will fight you as long as they don't think you're going to get anywhere.

Jim Woolsey: That's right. That's right but we're reaching out. We're reaching out.

[Laughter]

Greg Dalton: Let's have our next audience question for Jim Woolsey and George Shultz.

Female Participant: Thank you very much for being here and for talking about some of the alternative energies. Since climate global warming is real and oil, gas and coal are not good for the environment, do you think it's a good idea? We hear more and more talk about getting oil and getting it here and drilling, but we have alternative methods and we can create even others. There should be more effort, I think, to use the alternative things because the gas, coal and oil just aren't good for humans. They're carcinogenic and they kill animals too.

Greg Dalton: Thank you, ma'am. Jim Woolsey, are we moving fast enough away from oil?

Jim Woolsey: No. I'd like to move faster away from oil. I think there's a big difference between natural gas on the one hand, and oil and coal on the other. Coal is heavily carbon and is really bad for the environment. We're beginning to move away from it by EPA rulings pushing us more toward natural gas and in favor of closing down a coal plant and the –

George Shultz: It's also following the money.

Jim Woolsey: Right.

Greg Dalton: Cheap.

Jim Woolsey: Following the money because gas is so much cheaper. It's cheaper now than coal. So moving away from coal is, I think, pretty straightforward and desirable. Moving away from oil for the reasons that we both been talking about, I think is fairly straightforward and extremely desirable but you got to run on something.

And as we're waiting for batteries to get to be good enough that we can utilize renewables rather than just on a sporadic basis because of the fact that wind don't blow all the time and sun doesn't shine all the time, so you got to have a base load for both electricity and I think something that you can utilize for vehicle transportation as well. I think if you do it right that fracked natural gas can be done in an environmentally responsive manner. The main problem is the water that comes back up and there are now at least several approaches toward dealing with the water in fracking that at least I think are extremely promising.

One is the water comes back up after you blast it into the shale. You dig a pool that has plastic-lined like a big swimming pool, several million gallons, and then you treat that water with some new catalysts that are coming along the rest and also some electricity in some circumstances. You clean the water up enough that it can be reused for another well because I was plumbing around on fracking wells down in Louisiana a year or so ago.

In a room this size, there were six fracking rigs, one there, one there, one there, one there, each one being able to drill down and out away from the back of your rigs. But if you — that one set of basically of water dealing with five or six or eight wells is one way to get away from the water problems with fracking.

Another is something called propulsion fracking, which is using solid rocket fuel, which doesn't explode, it burns. You see the shuttle go up, it's solid rocket fuel. But it consumes what's necessary. It doesn't put extra water out and it shakes up the shale enough to be able to get the natural gas out.

Now I would suggest that it's worth very careful study to figure out how the environmentalists and the companies who work on fracking can work together and let us be able to use, I think, as an interim step natural gas both in gas to liquids for transportation and in electricity. And then as time goes on and the batteries get better, we can make a transition, I think, from natural gas to renewables but you can't have electricity and you can't have, I think, the right kinds of liquid fuels unless you work on the problem of natural gas. And I would count it very, very different than either oil or coal and its undesirability.

George Shultz: I might say that Fred Krupp at the Environmental Defense Fund has been studying just this issue that you're talking about and trying to make a constructive contribution.

Jim Woolsey: Yes. They're doing a very good job there.

Greg Dalton: We're getting close to the end here. Let's have our next audience question. Welcome.

Male Participant: In a cap-and-trade system, where are the taxes going? I don't see a clear plan on where that money would be invested. Bill Clinton said, "Well, we could lower the deficit but –

George Shultz: Can you repeat?

Male Participant: Oh. In a cap-and-trade system, where would the tax money go? Where would it be invested? Bill Clinton said, "Oh, we could lower the deficit but what about a plan to where it would go into developing solar industry." And also solar is very toxic to produce the panels and technology to make it less toxic. Thank you.

Greg Dalton: Where does revenue go from a tax or a cap-and-trade system? Following the money, where does the money go? Secretary Shultz?

George Shultz: In my system, it would go back to the populous that is set up so that it always administered let's say by the social security system, and it goes in equal proportion to every recipient of the social security check or everybody who's payroll pays a payroll tax. And you get a little check that says your cap and dividend. In my system, that's where it would go.

I'm always afraid that you say, "Okay. There's a pot that's going to get developed by this and we're going to spend it on X." That money is very fungible and it tends to sort of wither away and you don't know where it's going.

Greg Dalton: British Columbia has a system like that that's working fairly well and their economy has tanked. Let's have our next audience question. Welcome to the Commonwealth Club.

Gerald Harris: Okay. My name is Gerald Harris and we have two eminent people who have a lot of global experience. So my question is this war that's going on between the Sunnis and the Shia or Saudi Arabia and Iran could have long-term impacts on the oil industry. Do you think it's just a matter if they got the oil, they have to sell it or is it more complicated than that?

Greg Dalton: Who would like to tackle that? Secretary Shultz?

George Shultz: I couldn't hear the question.

Greg Dalton: The question about the Sunni and Shia war, Middle East conflict in oil.

George Shultz: Well it seems to me you have to look at the Middle East and say, "It's pretty unstable." That's a source of oil. So be careful. You don't have to be a wizard to figure out it's vulnerable. So that only underlines the importance of using less of what they produce of producing more of it here and basically producing alternatives just the sort of thing we've been talking about.

Jim Woolsey: I think George is exactly right. The reason oil doesn't sell for the $2 a barrel it did when I was growing up in Oklahoma and now sells for $103 or $104 a barrel is OPEC. It is a cartel nested inside a monopoly. Oil is 97 percent of so of the world's transportation and OPEC owns about 78 percent of the crude and oil reserves in the world. And oil has a very inelastic demand. A lot of products if you tax them or you'll see the consumption go down. Oil is very inelastic.

So what happens if you take a — create a situation in which there is added demand or let's say added supply and you would think that that would make the price go down. It's not what happens. What happens is whatever the Saudi king and the UAE and the Venezuelan president and the others who run OPEC want to have happened. If they want to raise the price, they have a cartel. They can withhold from production and raise the price. And there are three very good authorities for the proposition that the most important thing that a government can do in economics is to break cartels. And there are three really kind of leftwing Kansans, Milton, Friedman, Friedrich Hayek and Adam Smith.

George Shultz: So the message is learn the lesson of the 1973 embargo and use less of this stuff.

Jim Woolsey: Yes.

Greg Dalton: We've come to the end of our time here. I want to end up on a brief personal note. Thirty years ago, if I had gotten this close to a member of the Reagan administration, a director of the CIA, it would have been a different conversation but I was then an anti-apartheid activist and I've learned a lot today.

I want to thank you Mr. Secretary and Mr. Woolsey for today for showing us what we have in common is a lot stronger than what divides us, particularly the conversation earlier with Paul Hawken and Andy Revkin. So thank you for the conversation today. Thanks to our audience here on the radio and now this program of Climate One at the Commonwealth Club is over.

[Applause]

[END]