

Alternative Fuels

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Moderator: -- oversight office for Environment, Safety Occupational Health and Energy issues. Following his presentation, time allowing, he will open up the session for questions. Each of you should have a copy of his bio. I will now turn the podium over to Kevin W. Billings, Deputy Assistant Secretary of the Air Force.

[Applause].

Deputy Assistant Secretary Billings: Thank you very much.

First of all I want to thank everybody for being here today. The Air Force energy initiatives are a huge part of what's going to take the Air Force further into the 21st Century and beyond. It's an interesting portfolio.

I was sworn in on March 12th this year and the first thing that happened when I sat down with my boss, Secretary Anderson, he said we brought you in here to do environment, safety and occupational health, but we're going to give you the Air Force energy portfolio as well. I was sitting there with Mike Imani who has done a terrific job for many years, long before I was aware that the Air Force was anything but a football team that used to beat Navy all the time. [Laughter]. I said used to be. Hopefully on Saturday they will one more time.

Anyway, as part of full disclosure, all I care about is being Coast Guard.

Anyway, we brought the energy and the environment programs together because as you can see almost everywhere, energy and environment issues are inextricably linked from greenhouse gases to dealing with our eco system to dealing with issues that we have to deal with. And that's one of the reasons that it was all put together.

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It's a key thing. One of the things I did when I came into the job was to make sure that as we started off everything, every one of our presentations and all the presentations in our group, we always start off with the Air Force mission because that's what we're here to do. Energy drives our Air Force mission to be able to deliver sovereign options for the President to deliver.

One of the things that's interesting, I was just down at U.S. SOUTHCOM last week giving a speech to the regional military environmental heads from the AOR down there. As we were looking at the issues that bring the hemispheres together in terms of the things the Air Force can do and our commitment to the environment and to energy is one of the ways that the Air Force can expand our global reach not only in terms of taking care of bad guys essentially, but also the things that we're doing in terms of energy and the environment are things that we can take further throughout the region and throughout the world so that as we move forward hopefully we won't have to go fly and fight.

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This is a site picture of what the Air Force does in energy every year. This is last year. The numbers aren't expected to change too much except that cost of fuel is going to continue to go way up. The Air Force, as you see, spends 81 percent of our energy budget on aviation fuel. They key picture of that is the fact that we've reduced our consumption of energy in aviation about 25 percent over the last three years, and the cost has gone up over 70 percent in the last couple of years. So it's crossed like that.

The Air Force, every time a barrel of oil goes up \$10 it costs the Air Force \$600 million. So every dollar is \$60 million. So as you see the price of oil going up every day and it's up to \$80, that's increasing the amount of money the Air Force has to spend and is going to spend to be able to drive our missions throughout the world. So those are big things.

What happens is, because we have limited funds and because Congress gives us a budget and we'll obviously go back for supplementals if we need to.

The cost of energy is a huge, huge component of what goes on, and every time we have to do it, something has to get cut. You guys have seen, lawns aren't getting mowed, temperatures are going up in buildings, all of these things are things that the Air Force is having to do to deal with the energy issues.

If you look at facilities, we spend \$1.1 billion on facility energy. That's taking care of hangars, that's taking care of classrooms, it's taking care of all the infrastructure that we have to do to make sure that we can go fly and fight.

Finally, the smallest portion but still a significant piece is what we spend on ground vehicles, be it cars to get around the base, tugs to pull out planes, all those type of things take about a quarter of a billion dollars worth of fuel a year.

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Where does all this come from? If you look at this map and you look at where most of our oil comes from, we import 58 percent of our petroleum products from foreign sources in the United States. The Energy Information Administration says that's going to go up to 68 percent by 2030. And most of that comes out of the Middle East. Our four biggest suppliers of oil to the United States, four of our six biggest suppliers of oil to the United States are Saudi Arabia, Venezuela, Nigeria, and Iraq. All of them pose very specific and different types of challenges and vulnerability to our energy supply.

The other thing, as I mentioned, the only thing I really care about is beating Coast Guard and that's because my son goes to the Merchant Marine Academy. He sailed last summer through both the Straits of Hormuz and then through the Straits of Malacca. These are two of the most dangerous shipping choke points in the world, and if you consider that 4.6 million barrels of oil a day go to Japan from the Middle East, and that the two largest growing economies in the world are China and India and they're bringing more and more oil from the Middle East through those straits, the shipping choke points out there, and my son told me when he was going through the Straits of Malacca, he was on pirate watch every night. He'd have to stand two watches on the bridge, but then he'd stand a third watch, watching out for pirates who would come up to the ships and look at them. They were on a RO/RO, they had 100 feet of free board so it wasn't a problem. But you think of an oil tanker and the ability to get on an oil tanker and sort of disrupt what's going on there. Even if it's not coming to the United States and it starts to disrupt the flows to China and Japan, it's going to drive the price of oil up. So all of those vulnerabilities lead us to having to have an energy picture and to figure out what we're going to do. How are we going to become more self-sufficient, more dependent on U.S. sources so that we can deal with these issues that we have to deal with.

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The Secretary had a vision. It's basically we're going to make energy a consideration in everything we do, and the strategy is going to be very simple. We're going to reduce our demand, we're going to increase supply, and we're going to change the culture and how we think about energy in the Air Force. These things have driven in terms of aviation, in terms of facilities, and in terms of ground vehicles, each of these components are being worked on by the folks throughout the organizations A3, and the operators are working very hard on these things as well as the A4-7 and the folks in General Yuleberg's shop.

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In terms of the things the Air Force is doing, I don't need to read these things to you. But the Air Force is the largest user of renewable and green power in the federal government and we're the fifth largest user in the United States. We've got a commitment to continue to move forward and to move as much power as we can and as is practicable to sources that are greener than they are today. Again, if you look at a worldwide site picture of the issues that we have to deal with in terms of global warming that is an issue that is going to be front and center throughout the next couple of decades, you look at those and you look at ecosystems, how we manage those things are going to be very very important.

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In terms of reducing demand, again, remember that big picture. Eighty-one percent of what we do uses aviation fuel. So the aviation side in terms of reducing demand, the AFSO-21 organization and a group within it called Conduct Air, Space and Cyber Operations, CASCO, has done and is continuing to drive a process to look at how do we reduce weight on airplanes, how do we figure out ways to fly in more direct routes, what are the optimal ways to use simulators to make sure we can not have to fly as many missions and move forward in terms of that.

One of the things they did is they went and took a C-17 and stripped out all of the things they didn't need and put it all back in. They said there was about 5,000 pounds of stuff on the plane in terms of tool boxes, mats, ropes, chains, all types of things. They took everything in and they systematically worked with the operators to put everything back in that they needed to put back in and they were able to reduce the overall weight of that one plane in this experiment by 2000 pounds.

That's not going to be the same operational capability for every mission, and again, operations is the key. One of the things we talk about and is paramount as we drive these energy issues is that we have operational missions and those are the most important things that come first, but we're looking to figure out ways to do our operational missions in a way that is more energy efficient and can be done as optimally as possible.

So they put everything back on, they were able to save about 2,000 pounds on that one experimental plane.

But one of the things they've been able to do is they've found out if you can reduce the overall weight of all the mobility aircraft in the Air Force by just 100 pounds, you'll save 1.6 million pounds of fuel over a years.

So that's some of the numbers and they make a lot of sense. They're also working with folks like FedEx, like United, and

they're benchmarking private industry to look at how they can run their planes better, how they can manage things on the ground, in the planes, how they can switch out chains for nylon ropes, how they can perhaps taxi out to runways using one engine versus using two or four, or perhaps even tugging them out on an electric vehicle. All of these things are processes they're putting together and they're putting together an overall strategic plan within the A3 organization to drive this to make sure that energy and our ability to reduce energy demand as we fly our missions continues to move forward.

In terms of facilities, the A7-C folks, the folks in General Yuleberg's office, have looked at, they've got an overall strategic plan to look at every facility within the Air Force, look at how they monitor it, how they measure them, look at HFAC systems, look at the types of lighting, looking at the different types of things within facilities to be able to again reduce demand throughout the process.

One of the things they put together, and it's the same thing in ground vehicles. We're moving more and more towards trying to put in more electric vehicles, more ability to do low speed vehicles, things like souped up golf carts to get around bases as opposed to having to drive your big Chevy around. Those types of things are part of an overall strategic plan that is being worked in the A7 shop to move forward with that.

As part of this effort as well we've put together two model bases. There's a base at Barksdale Air Force Base in Louisiana and McGuire. These bases were selected because one was a combat base, one was a mobility base; one has a large heating load in the winter at McGuire and there's a large cooling load at Barksdale in the summer, to see how when you put all of the things that the A7 folks and the operators are trying to do to reduce demand and go forward, how all these things integrate together. How you can measure buildings. They're metering all the buildings at these sites to figure out which things they do get the biggest bang for the buck and how do they go forward with this. So those are things that the Air Force is moving forward on in terms of again, reducing demand.

Finally, in terms of science and technology, in reducing demand the folks at the Air Force Research Lab are looking at different configurations of engines, not only conventional engines that we have today in terms of how do they readjust the combustion chambers inside these engines so that there can be a more consistent flow of air and fuel that will burn more efficiently, but also in terms of future engines that will hopefully maybe even not be carbon burning and air burning engines. The folks at AFRL are doing an amazing job in that area.

Increasing supply. Again, this is probably where the most visible and prominent initiative in the Air Force is going forward, which is the Air Force Synthetic Fuels Initiative which is a commitment by the Secretary to certify the entire Air Force fleet to be able to fly on a synthetic fuel blend by 2011. The goal is to certify the entire fleet and then to help to create a market and to help drive the market out there. The second part of that commitment is that by 2016 we have committed that we will buy half of our CONUS fuel requirements as a 50/50 blend of synthetic fuel and regular JP8. The caveat on that is that all the fuel has to incorporate carbon capture and effective reuse. The reason for that is we're going to use synthetic fuel, and the reason we're driving the Synthetic Fuel Initiative is because the United States is home to 25 percent of the world's coal reserves. It's an asset that we have, and the technology exists to be able to take the coal, turn it into liquid, turn it into liquid jet fuel through the [Fisher Tropes] process which has been around since World War II, actually before World War II, and be able to use that so we can have a domestic source of jet fuel so that we don't have to be quite as dependent on the foreign sources of petroleum.

The downside to the [Fisher Tropes] process is that in creating the same amount of synthetic jet fuel out of the process, it creates 1.8 times as much carbon in the atmosphere as if we refined that same amount from petroleum products. So to offset that and to make sure that what we're doing is greener than what we were doing before, we're working with the National Energy Technology Laboratory at Morgantown, West Virginia and at Pittsburgh to look at ways we can use mixed feedstocks of biomass and to be able to reduce the carbon output of that, and we're also looking at technologies and helping them to look at technologies to do carbon capture and either reuse or reforming that. So where you take the carbon and you might use it in enhanced oil recovery, so you pressurize an oil field with the CO₂. The carbon molecules attach to other carbon molecules and will push up methane and natural gas. There are a number of opportunities to do that or to use the carbon for enhanced growth of algae that can again be used in the feedstock for producing the fuels.

The Air Force and NETL, the National Energy and Technology Lab, in August put out a joint report in terms of using mixed feed stocks in synthetic fuels programs. For example, if we use 28 percent switch grass mixed with the coal and the [Fisher Tropes] process the amount of carbon can be reduced to 76 percent below that which would be in an oil refinery. So what we're able to do by working with the Department of Energy, looking at using biomass as well as coal as part of our liquid fuel program, our synthetic liquid fuel program, we're going to be able to create a fuel that is actually greener than what we're using today which is what we're moving forward to.

In terms of increasing supply at our infrastructure and our facilities, this is another unique thing and one of the things that we're moving forward with is we want to take the land that the Air Force has that isn't being effectively used, or is being under-utilized, like buffer land, that can be used for something else and use it to host energy projects, both to supply energy to our bases and make the bases more secure, but also to supply energy to the communities and to be commercially viable projects.

The Air Force has a project, if you look up at the solar array at Nellis Air Force Base, it took 140 acres of land at Nellis that was being used as buffer land, worked a deal. A private developer came to us with a deal that basically said if you'll let us use the land, we'll lease this land from you. We're going to put solar arrays here which will help us deal with the peaking load at the base and in the community and we'll reduce your cost per kilowatt hour by about a penny. What that did was that saved the Air Force at Nellis a million dollars a year simply by utilizing this under-utilized land to build the solar array.

So what we're looking for, we're having a conference out in California starting tonight for the next two days where we're going to bring developers and financiers and technology companies as well as communities and builders together to look at what are the assets throughout the Air Force that can be used to do energy projects, whether they be renewable projects or conventional projects. We're going to be looking for figuring out how can we take our land and essentially be that piece of the puzzle, the siting piece of a puzzle for energy projects going forward. These projects, it's important to remember that these projects are not going to be simply projects that we're going to pay for out of the goodness of our heart. These have to be commercial projects that would stand alone on their own two feet if they were built on an Air Force base or if they were built two miles from an Air Force base.

But the land and the property the Air Force has, we want to be able to get return for that investment that would otherwise just be sitting there. So if somebody brings it to us we're going to get fair market value or the best value for that land and we'll compare it to if somebody was going to build it on the other side of the fence and Joe Smith was going to rent it to him for a million dollars a month or something, we would expect to get that. But it's land that if we weren't doing it right now we wouldn't use that.

What it allows the base commanders to do, this program, that's money that the base commanders can use to do improvements and upgrades and those type of things. So we're working very

closely in putting that together. That's sort of the next part of increasing supply.

Again, in the science and technology area, they've been the driver in making sure that as we certify our fleet in terms of the aviation, the synthetic fuel, they've been the folks who have been making sure that all the certification is done right, that the effects on the engine within the parameters, everything was in the parameters so that there won't be any difference between flying on the synthetic jet fuel and flying on what we have now.

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One of the things I wanted to talk about, and Secretary Anderson asked me this morning to make sure I talk again a lot about where we're going with the enhanced use leasing and not only enhanced use leading which is one tool in the tool box, and a big tool, but in terms of using assets throughout the Air Force to do energy projects, there are a number of things that we want to take into consideration and these are sort of the overarching principles for our organization, SAF/IEE, but as we look at doing projects they have to be designed to protect and sustain our resources on our base; they have to make good financial sense; and they have to make sense for our airmen and their families in the communities. As we deal with the public and we deal with our communities we've got to be transparent, we've got to be accessible, and the other thing is we've got to be predictable and consistent so that people will be able to trust us as we put these projects together, that we're not going to pull the rug out from under them, and if there's a need to have contingencies in there, they're completely transparent and people understand what's going on from there.

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Finally, in terms of making energy a consideration in everything we do, changing the culture of the Air Force is part of what we're trying to do. I spent most of my career within Westinghouse and big industrial organizations, and probably the hardest thing to do in a big industrial organization, especially one that's as successful as the Air Force, is to change. Because if you've been successful, you've been doing things right for a long time, so you think what do I need to change for?

What's happening is the world is changing around us and we need to make sure that we can adapt to that and so the four tenets of successful culture change are leadership, training and curriculum and communications. And the Air Force has tremendous leadership from the Secretary, Chief Moseley, Chief McKinley, and everybody at the bases. And every base I've gone to the wing commanders have always been very impressive about what they talk about in terms of importance of energy.

I was talking to the wing commander at Tindall who was telling me about how regardless of what they say about patches, we're going to turn off our computers at night. We can put patches in and work on those type of things. Little things like turning off lights. Little things like turning off computers and making things, are part of the culture which will drive to how do you do your mission planning, how much fuel are you going to take on board, and can you look at the issues and can the pilots and the wing commanders and group commanders, can they challenge the status quo to make sure that okay, if I'm going to fly a mission -- I'm going to load up at night. I'm going to put all my fuel on at night and the mission changes in the morning, are there going to be enough people there to be able to reduce my amount of fuel so I can get up in the air and be more efficient. Still fly my mission, but not have to fly it with as much fuel. Right now those are issues because of both funding and priorities.

One of the things we want to do is change the culture so people will challenge the status quo in terms of what's going on. That starts with training.

We were just down at Air University talking to the folks at the Air War College last week and to the ROTC accessions folks, and General Flowers was all over this stuff. He really wanted to drive this down throughout all of the ROTC organizations. So we're working with them to make sure that training and curricula is a huge part of this.

I've been spending some time with General Dana Borne at the Air Force Academy and there they're developing an engineering and energy efficiency curricula. They're putting together an energy research center. And Dana has taken the initiative to start bringing together all five academies and their energy programs to start talking about what we can do. Again, this is a way that the Air Force is showing leadership both in terms of training and curricula.

Finally, the most important thing is constant communication. People talking about how energy is affecting them. Every day you go to the gas pump and you see what's going on. You get your electric bill. You need to bring that to the base and think of it in the same way.

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As we move forward the one thing I want to leave you with, and as we start with questions is to understand the relationships between what you do in your daily life, the environment, and the things that go on, and what are the consequences, and figure out what we can do as a whole Air Force to again, reduce demand,

figure out ways to increase our supply and change the culture so energy is a consideration in everything we do.

Now I'm going to get off of transmit and hopefully listen to you guys. Thanks.

Question: Sir, are there more bases around [inaudible] Dyess and [inaudible] completely renewable energy [inaudible]? Are there other bases that [inaudible]?

Deputy Assistant Secretary Billings: Actually while Dyess and Fairchild are 100 percent, and thank you, that's one of the stats I didn't bring up in this thing. But are 100 percent renewable, Minot is like 95 percent. We have 37 bases that buy RECs or use renewable power. Actually any base can buy a renewable energy credit and put it into their mix. It just depends on the viability of and the cost of buying that REC or whether or not there is a large renewable component outside the base.

In terms of bringing renewables onto the base, again, we look at the EUL forum and the energy forum we're having out in California, is going to look at four specific big projects that the Air Force studied to look at bases and there's Kirkland, Luke, Edwards, and Vandenberg. Vandenberg is a wind project, a proposed wind project. It may have some mission problems there, but at the three other bases there's a huge opportunity for large solar, either photovoltaic or solar collecting type of solar thermal generation. We're hoping to get a number of things from there.

In terms of using the roof space on buildings, there are a lot of different opportunities and that's what we're hoping to get going forward there.

Question: With the transportation fuel, what percentage [inaudible] syn fuel [inaudible]? To what extent does that create a logistics issue trying to deal with [inaudible]?

Deputy Assistant Secretary Billings: In terms of the ground fleet, is that what you're talking about? Overall?

Overall aviation, our goal is to certify the entire fleet. When I say the fleet, it's the entire system which would be the pipelines, the tanks, the trucks, everything that goes into making the system move forward.

I testified at a Senate Finance Committee hearing out in Dubuque, Iowa the end of August and the folks who, one of the folks on the panel with me was from Magellan Pipelines. One of the things they're testing as well is how a syn fuel blend will work through the pipelines.

Right now their discussions and the things they've found is that at a 50/50 blend the effects on the pipeline are essentially the same as regular JP8 that they move through it, but they would probably put a pig on each end of the pipeline and they would be able to move it. So the infrastructure should be able, and like I say, we're going to test this and this is part of the process, but the infrastructure should be able to be in place to be able to move this as effectively as regular JP8 can be moved around the country.

Question: You mentioned A4, A7, and that's where the geo-base program lives. Have you thought of building a mission dataset within the geo-base program and using that mission dataset for decision support [inaudible]?

Deputy Assistant Secretary Billings: I'm glad you brought that up because that's one of the things that when I came to the Air Force Mike Imeni was talking to me about the availability of geo-base. He's got a number of ideas of the things they want to do with geo-base and how it's going to work in energy programs.

Question: One of the other things [inaudible] is replacing base housing. Have you looked into, as you go through that process [inaudible] and small-scale solar plants [inaudible] as you do that? I understand that a lot of these projects can take several years to recover the initial cost, however I've lived in base housing build in the '30s [inaudible].

Deputy Assistant Secretary Billings: That's one of the things that we are going to look at and the folks in General Yuleberg's shop are looking at as well, as the privatization program goes forward, how is the energy efficiency driven into the base housing is one of the parameters as they go forward with that.

The other thing in terms of buildings, the Air Force has established a requirement that every new building that is built has to meet the lead silver qualifications. The lead standards are standards that are set up for environmentally friendly buildings. There's lead certification, there's lead silver, lead gold and lead platinum. The Air Force has committed and has a requirement that the buildings be built to a lead silver standard going forward from now on.

As a matter of fact one of the first lead gold certified buildings is the new gym down at Tindall, is one of the more environmentally friendly buildings in all the federal government.

Question: Are there any plans to have the Department of Energy actually oversee some of this? Because it seems like we're duplicating a lot of processes in the Air Force looking

into working with the Department of Energy. Why isn't the Department of Energy actually advising and doing a lot of stuff they haven't been doing for years?

Deputy Assistant Secretary Billings: I spent most of my career working in and around the Department of Energy. One of the things that's kind of interesting, the Air Force has a tradition and history of leaning forward and leading and we have a Secretary who's moving forward on that. Part of the reason is we're going to lead. The Department of Energy is actually catching up.

I had a meeting with the Assistant Secretary for Renewables about six weeks ago and one of the things they're continually pushing and they're trying to move forward with are moving forward with the ESPC process, Energy Service Performance Contracts. We basically use other people's money to do a lot of projects and a company will come in and do these things.

The Air Force was the first federal agency to really move forward with ESPCs and we found a lot of low-hanging fruit and we were able to move forward with it.

But what we've done that other places haven't done is we've found a lot of flaws in the process in working with our contractors and we've backed off on those things now until we can look at how can we do it better? If you talk to General Yuleberg and Mr. Anderson, and we all walk through this process.

There are a lot of things that ESPCs were doing and charging, our civil engineers on our bases could think of themselves. And charging us not only the money that you would spend to finance them privately, because that's what they were doing, but they were charging us a lot of money for things we could have done ourselves.

So what we're doing is we're stepping back, we're going to see how can we do these things better, how can we move forward with these things. And as I told Secretary Karzner over at DOE, we're not going to do these things right now. We're going to back off on them. You've seen everybody else moving forward, but we're going to try to take those lessons, we'll share them with you, but in terms of the civil engineers at a base decide we want to upgrade our boiler and it's going to have a ten year payback, there's nobody who borrows money cheaper than the federal government. So why should we pay this delta? We thought of it, we can manage it, and we can pay for it.

Quite frankly, the baseline that I would use is okay, we want to upgrade the boiler, we've got this project, we're a good customer. Let's go to our local bank and figure out what it would cost us to borrow the money from a local bank, and we

absolutely should not pay any more to an ESPC than we would pay to a local bank to do it ourselves.

So those are things that we're moving forward on and these are things that because we've leaned forward and we've been out in front and we've been leading, we're ahead of the Department of Energy on a lot of this stuff. They're good and they're talented folks, but they're not as good as you are. Period, paragraph. I've worked for them most of my career and they're just not as good as you are, and that's why we're ahead of them.

Question: Have we looked at our legacy fleet to see what [inaudible] modified in airframes to be more efficient? Southwest Airlines is doing a project [inaudible] wingtips and they claim they save five percent on fuel in a year just to modify the air fleet. Has that been done for legacy fleets? And [inaudible] 2025, 2030 timeframe?

Deputy Assistant Secretary Billings: Actually AFRL is doing a lot of that same type of thing, looking at how do they modify airframes and things. I thought you were one of General Keys' plants basically saying we just need a whole new fleet. But that's part of the whole issue that we're dealing with here in terms of the overall amount of money we spend on energy. If we can reduce our demand, the issue is we can more effectively recapitalize our fleet and get newer, more fuel --

The F-22 and the F-35 are far more fuel efficient than what we have in the fleet now. So if we can recapitalize the fleet, that's going to go a long way to dealing with it. But the answer to your question is yes. The folks in the operations side are looking at all of those type of things.

Question: [Inaudible] lease land to get energy to save a penny for energy. Have we considered maybe doing a little more capital investment? Owning [inaudible] and then [inaudible] the energy [inaudible]?

Deputy Assistant Secretary Billings: That's something that gets discussed, but in terms of the overall competencies and -- again, we do a lot of things really well. In terms of managing and utilizing our assets and we're going through the manpower reduction and all the things we're doing. Having the ability to do that is something that, if somebody's going to -- it would be great if we could do it, but that's not where we're going. I talked to Mr. Anderson and the fact is that we've got this land, it's an asset, but the things that we're doing with our mission and the people need to be focused on the mission as opposed to running power plants.

So until that policy changes that's not going to be something we're going to do.

Question: You said that in 2016 we'd go to the 50/50 synthetic fuel blend. How big of an infrastructure upgrade [inaudible] plants are going to have to make? Is it going to be a huge infrastructure, giving up barrels of [inaudible]? [Inaudible]?

Deputy Assistant Secretary Billings: That's a good question. The folks at NETL that we've been working with have said that by 2016 they believe there will be an infrastructure that is available within the United States to be able to supply that amount of fuel.

If you take half of the CONUS requirement. Last year, in 2006 the CONUS requirement was 1.6 billion barrels, and half of that is 800 million. So a 50 percent blend would be 400 million barrels -- gallons of synthetic fuel.

I have to get this right. The last time I was briefed by the [FP] folks, a commercial size plant would do about 30,000 barrels a day. And so the infrastructure, I wasn't a math major, so -- [Laughter] -- there's going to have to be an infrastructure but it's going to be, for us to do this it's going to have to be a private infrastructure to do it. All the economic analysis that I've seen and that have come forward is that for a [Fisher Tropes] process to be economical oil has to be consistently above \$50 a barrel. At \$80 a barrel, hopefully it won't stay that high, but if it's going to go down below \$50 a barrel, I don't foresee it, especially with the pressures from China and India and Southeast Asia on oil. I don't think that, unlike during the first oil shock when we started doing synthetic fuels, the folks in the Middle East turned on the spigot, flooded the market, the price went down, and synthetic fuel plants were no longer economical. I don't see that happening today.

There are a number of folks who are beginning to look at these processes. There is Syntroleum and RenTech who are looking at building plants in the United States. Major coal companies. Peabody Coal has begun discussions with the state of Indiana on perhaps putting a facility at the Crane Warfare Center in Indiana. Again, we're looking at maybe using the land at Maelstrom, again, for a commercially viable deal.

Congress is looking to provide DLA with the authority to do long term contracts, which is sort of the long pole in the tent for a lot of the financial backers of these things. So if you can come with a contract and technology they'll lend you the money. Right now we're just trying to get over that hurdle, the industry is.

Again, we're going to be a customer. We're going to say these are going to be our fuel specs. We want to buy it for a

price that is competitive with petroleum-based jet fuel. And it has to be greener than what we would get from an oil refinery. We want to buy 400 million gallons a year.

One of the things we're doing also in this project is we're working with the commercial aviation industry. There's a group called the Commercial Aviation Alternative Fuels Initiative which is the airline industry, the engine manufacturers, the airframe manufacturers, and the Air Force, and we're all sharing technology, we're all moving forward with this.

The commercial airline industry has said that they want to certify their fleet by the end of next year to be able to use it. But unlike, and we're willing to say that we're going to buy this at a competitive price. They'll buy it at a competitive price too, but they're not going to make a commitment to do that until they see the price come down. There may be a delta which we're going to pay because of the national security premium or something because we want to be able to have this domestic source of fuel, but it's not going to be a huge premium if it's one at all.

Every study that we've seen in talking with the folks at NETL, if by 2016 the price of oil stays where it is, there will be plenty of this around.

Question: How is it impacting our foreign partners [inaudible] upgrading [inaudible] as we go to more [inaudible] partnerships?

Deputy Assistant Secretary Billings: It's interesting, as I said earlier, I was down at SOUTHCOM last week and I had an opportunity spend some time with the chief engineer of the Brazilian Air Force who was talking about this. They were looking to what we were doing in terms of syn fuels. They were looking at it also in terms of how do they deal with their carbon issues as well. And one of the things both in terms of using synthetic fuel, but by developing technologies for carbon capture and reuse and being able to deal with carbon issues. The Brazilians were more interested in how we were going to deal with carbon and the technology, and our goal is to, as we work with NETL and we work with folks, especially on these environmental issues that tie into energy, to share them throughout the world so that we can reduce our carbon footprint.

That was the biggest issue. That was also the biggest issue from the folks from Argentina. Again, how do we deal with carbon? How are we going to deal with those things? And can we have an ability to look at the carbon capture and sequestration and reuse issues that are underlying the things we're doing in terms of synthetic fuel.

It's an indirect answer to your question, but at least in the SOUTHCOM AOR, our energy initiatives are again inextricably linked with the things we're doing environmentally. The things we're doing environmentally were the things that really seemed to tie our region together even more than just the fuels issues.

Question: I have two questions revolving around ground transportation. The first, are the figures that you showed for fuel usage, about \$240 billion. My question on that, is that [inaudible] or did that include GSA as well?

And the second part is are there any initiatives being conducted that will do away with [inaudible] footprint for vehicles in the AOR? In other words not flex fuel P85, but a vehicle [inaudible] that could use bio-diesel, diesel, [inaudible], that kind of thing?

Deputy Assistant Secretary Billings: The answer to the question is that it's both of them. The GSA fleet, as it was, the blue fleet. And in terms of the vehicles in the AOR and what's going on, we've given a lot of fuel, not a lot, but we're working with the Army in terms of what we're doing with our synthetic fuels and driving, working with the Army and sharing the information they use on their vehicles in terms of the ground fleet, especially what they're doing over there. Beyond that, I don't know the answer to that question.

You guys have been a great audience. Thank you very much.

[Applause].

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