STATE OF VERMONT
PUBLIC SERVICE DEPARTMENT

DRAFT VERMONT ENERGY PLAN

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Middlebury High School
Middlebury, Vermont

Public hearing held at the Middlebury High School, 73 Charles Avenue, Middlebury, Vermont, on September 27, 2011, beginning at 7 p.m.

PRESENT

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COMM. MILLER: Hi everyone. I'm going to go ahead and reward those of you who came out and came on time and get started here in just a moment.

I'm Liz Miller, the Commissioner of the Department of Public Service here in Vermont. And also here tonight, Deputy Secretary Chris Recchia from ANR, and Gina Campoli from VTrans, one of the planning gurus over at VTrans, and several members of the DPS are here as well with me tonight, and we have a court reporter recording everything that I say and everything that you say more importantly tonight.

And so when we turn it over for public comment, we are going to have you come up a little closer to the court reporter and spell your name, if you can, so that she can record it.

MR. RECCHIA: If you can't spell your name --

COMM. MILLER: If you can't spell your name, what are we going to do? Fair enough. We can tell jokes because there are so few of us here tonight.
MS. CAMPOLI: Is she going to record that?

MR. RECCHIA: Sorry. First time.

COMM. MILLER: So I'm going to take it down because I hate standing at a podium. I guess I should use it, right? It helps you.

MR. RECCHIA: It does help.

COMM. MILLER: So what I thought I would do before we turn it over to what you all have to say about the draft plan, is a presentation just setting some of the highlights, and for those of you who attended any meetings in the spring, I swear this is a different presentation. So that's good news. The bad news is you're the first audience to see it, so bear with me, and I would be happy to take any comments about it afterwards too by the way.

I wanted to at least set the table before we have the public comments so you can have a sense of where the department and the agencies and departments we worked with were coming from when we drafted the plan. So first of all, just very briefly, the Comprehensive Energy Plan is intended by
statute to cover all areas of energy usage in the state, not just electricity, but also transportation, land use, home heating generally. And by statute it has to include a number of analyses and projections on usage, supply, cost, the environmental effect, and also then to recommend implementation. And so the plan though certainly long, don't get me wrong, is also not the end of the story. It recommends actions for further implementation.

So some of the things in the plan set forth ideas and specifically say, hey, this is an idea we need to develop. We recommend that the legislature or interest groups work with the legislature and other stakeholders to develop these ideas. We create it in order to help Vermont ensure adequate, reliable, secure and sustainable energy sources for our future needs. We have to do that with affordability in mind, with the state's economic vitality in mind, and we want to do it in an efficient way using our resources in an environmentally sound way.

We are also in this plan, for the first
time, also combining it with our state
electric plan, so that we don't have plans
at cross purposes but instead have a single
ergy plan that combines our ideas and
thoughts and recommendations on electricity
with our ideas, thoughts and recommendations
in other energy sectors.

So just a real quick overview. I'm
going to show you some facts on where we are
now. Give you our long-range goal, why we
should achieve that goal, why we think we
can achieve that goal. And then highlight
some of the strategies by energy sector.
And I'm going to try to do that all in less
than a half an hour so we can turn it over
for a good discussion.

Okay. So where are we now? Total
energy usage by sector, just so you have an
overview, it's about a third, a third, and a
third. A third transportation, a third
residential including heating and
electricity, and a third commercial and
industrial. Again heating and electricity
being the two big parts. You can see within
each part of the pie the breakdown of the
type of energy within each sector. Not surprisingly transportation zero to 100 percent petroleum based fossil fuels, gasoline and diesel, whereas residential and commercial are much more electric.

The story in Vermont is the same as elsewhere in the United States. Energy usage has increased somewhat dramatically in the past several decades. This is a 40-year picture of energy usage. And it's broken down by type of energy, and what you see consistently is an increase in our energy usage. And particularly notable in electricity and our transportation sectors but really across the board we have been using more energy over the years. Our greenhouse gas emissions happily have shown in recent years a different trend. And what this shows is from 1990 and then projected forward to 2028 what our greenhouse gas emissions have done again by sector. The big dark purple part in the middle is transportation, just under that is residential and commercial heating fuel. And then below that is electric supply. And
you can see that we have had an upward trend in emissions until just about 2003. And then we start to see a downward trend. So that's some good news. The bad news is that the goals the state set for next year, 2012, would be represented by the light yellow steep line there, and we are not going to meet that goal.

There is another goal set by the state legislature for 2028. And there is a path, as you can see if you can just kind of bend the current emissions curve down just a bit, we might be on a trajectory toward reaching the 2028 goal, but we have more work to do.

Okay. So renewable energy is one way to help with emissions. Not all renewable energy is emissions free. But generally speaking the definition of renewable is something that has, you know, doesn't use the fuel source into the future and keeps it for future generations, and generally speaking they are sources that are less carbon intensive, less greenhouse gas intensive.

Where are we with renewable energy? Our
total energy type here, we use about 40 percent electricity and 61 percent, 60 percent other. Electricity is heavily renewable already which is good news, about 48 percent, and that includes Hydro-Quebec. It also includes projects where our renewable energy credits are sold out of state just to be very clear on what I'm saying. So I'm talking about renewable sources.

Our other energy sectors are not very renewable yet at all. About five percent, and that's mostly in biomass, mostly for heating. So heavily dependent on fossil fuels and transportation and thermal. If you add up all the math on this slide, which I have done, you would get this picture which is our total renewable energy currently is nearly one quarter. It's kind of a surprising stat for people. But it's dependent upon the progress we have made in electricity, but what we need to focus on in the plan sets forth this, we need to focus on in the future is how do we move the renewable picture in the other sectors too.
So then just really quickly with regard to electricity. One of the things the plan talks about is where we currently are in our electric supply and where we are going to be looking out in the future. And I wanted to at least give you two years' snapshots, and it varies year by year depending on the commitments the utilities make. But on the left here is the 2009 actual electric supply. You can see just over a third nuclear, just over -- well about a third Hydro-Quebec, and then 11 percent in-state hydro and it goes down from there. On the right is the committed 2013 electric supply. And as you can see nuclear drops substantially with Vermont Yankee not being contracted in state, Hydro-Quebec stays about where it is now, in-state hydro the same, system power on the region right now is about a third of 2013's projection, but renewables including new renewables and then other renewables is a growing percentage. And that's just one-year snapshot. If I did 2017 it would look different, although there would be some what folks often refer to it
as white space, in other words, uncommitted resources because the utilities haven't fully committed all years out into the future.

Energy costs. This is dollars going out of our pocket on the left. This is inflation adjusted dollars going out of our pocket on the right, and what it shows you is that electricity is the highest priced energy source, but if you look at it on an inflation adjusted basis it's actually flat to slightly less than the way that inflation has been rising. Whereas with the fossil fuels, what you see is a rising costs both in the dollars that went out of our pockets as well as the inflation adjusted dollars that went out of our pockets. It's going up faster than the rate of inflation.

Electricity prices, folks like to know where we are regionally. The orange line is Vermont. Again cents per kilowatt out of your pocket on the left. Inflation adjusted to 1991 dollars on the right. What you can see in Vermont is a relatively flat line relatively, when you look at it on an
inflation adjusted basis. The region, New England, is the green line, and it has been more volatile, in other words, more change over time. The downward trend on the green line, you know, you can talk about why that is. Mostly it's attributable to natural gas prices falling at around 2008, 2009 because other areas of New England are heavily dependent on natural gas. Vermont has traditionally been less so. Although even the long-term contracts we have seen recently have been tied to market prices. So we may see a little bit more of the ups and downs including the benefits of the natural gas prices in our own rate going forward.

Okay. So efficiency. Why -- you've seen in the plan probably that we suggest efficiency should be the first thing we always look at. Why is that? We have seen with electric efficiency some great moves already. We have been able to save about two percent a year of our electric load through efficiency measures. And that has equated to about a four cents per kilowatt
purchase, if you can think of it that way, of that efficiency. In other words, you can buy the efficiency that we have been acquiring for around that 4 cents per kilowatt number, which is lower than most resources you can buy on the market for electricity.

So the bottom line is it's a good deal to do efficiency. There is also benefits beyond just the kilowatthour. We, for the plan, I think, for the first time in this state, did an economic analysis, impact analysis of the efficiency dollars that are spent. We took one year, 2012, because it's an approved budget, and we asked for an impact study of that one year of spending. And what the -- and it's in the plan, it's one of the appendix to the plan. What we found is you get about five dollars in value for every one public dollar spent for electric efficiency. There is also jobs created, and we avoid about two cents per kilowatt in regional charges. That's all just a long way of saying there is benefits besides just the energy we are saving.
There is monetary benefits to efficiency.

Thermal efficiency, which is heating efficiency, is also effective. It also creates jobs and leverages our resources. Again we did a study in the plan that I would love to hear comments on if anyone has yet had a chance to read it, and the story is very positive.

We have a mix of programs for efficiency right now, but there is really from comments we have received in developing the draft, there is really no easy path currently. Many Vermonters feel that efficiency is not easy to implement for them. You know, they may get an energy audit, but then what do you do? They may realize they can do a $10,000 improvement in their house that would have a good pay off over time, but how are you going to finance it? So the barriers that exist to getting efficiency measures actually in place is a consistent theme that we heard in developing the plan.

We also heard, and it's certainly true, that we are not on pace to meet our legislative goal of improving the efficiency
in 80,000 homes, 25 percent by 2020. In fact, based upon the research that's been done, in order to hit that 80,000 homes per year, I'm sorry by 2020, we have to do about 8,200 homes a year between now and then. It's a lot of numbers, I know, but the bottom line is that's a lot of homes to do per year. It's going to be hard to do that.

The good news I think is that the recent study done by the RAP, Regulatory Assistance Project and the High Meadows Foundation, found that the cost per home to get that 25 percent savings is around $7,500, which is actually lower than some folks had thought it might be. And so that's good information to have and a lower figure than some had thought it might be.

Transportation. Gina is here. Thank you very much for all the work on the transportation section of the plan. Just some data on transportation to keep in mind. It's usually about one fifth of the household's expense in transportation nationally. Most Vermonters spend more than that. In Vermont it tends to be the second
highest expense in any household. And that's all in, for fuel, insurance, vehicle maintenance, et cetera. And so that means that many Vermonters spend more on transportation than on health care, education or food. In other words, the biggest expense is their home, their second biggest expense tends to be transportation. And it's also, as you might remember from that chart a few minutes ago, one of our -- well it's the largest contributor to greenhouse gases. It's one of our biggest challenges in greenhouse gas emissions. It's more than 40 percent of our total emissions. Why is it that it's so costly to both ourselves and our pocketbooks and our environment? It's because in the last 30 plus years, we have driven a lot more than we used to. This shows from 1975 through 2009 vehicle miles traveled, and the scale is in millions by the way. And what you see is just a dramatic increase in the travel Vermonters are doing in their vehicles over time. And then you see a bit of a dip, and that is attributable to the rising costs in
fuel and then the economic recession. But the trend over time has been dramatically more travel.

And so what's the impact there? When you look at land use, we all are not surprised by this graph which simply says that Vermont is less populated, it's less densely populated per mile than the rest of the United States. We know that. About 30 percent of Vermonters, however, live in our designated downtown districts. So about 30 percent live in a town or a city, the other 70 percent live rural. What's interesting is the 2010 census shows that those 21 communities have grown at a slower pace than the rest of the state. So what does that mean? It means that we are spreading out. And that's not surprising if you look at the trend in terms of travel. So the link is pretty clear. There has been studies done, it's probably not surprising to anyone here, you will travel fewer miles in your car if you have better accessibility to services where you work, where you shop, where you go to the doctor. So that's not a surprise.
And so therefore, what we need to think about when it comes to energy use is how we grow. There is a different energy profile in this picture than in this picture than in this picture. Not just because of the homes but because of what the people in the home have to do to get services and work.

Okay. So that was just setting the table with some facts. So what are we going to do in the future? What should we set as our long-range goal? And for those of you who have reviewed the draft plan, you will see that we recommend that by mid century we strive to be nearly free of fossil fuel usage in all energy sectors. And specifically what we are calling for is 90 percent renewable by 2050. It's a big goal, but I'm going to explain a little bit about why we think it's achievable.

So recall the slide before where I showed you the pie of where we are right now, about 23 percent renewable now. About a quarter. We are suggesting go to 90 percent. Visually that goes like this. Not a surprise, a lot more renewable. And again
knowing that electricity is already about 50 percent renewable you have to start thinking how are we going to achieve that. How is that possible. Even before that, why should we achieve it.

There is really four key benefits. We outlined this again in the draft plan. Number one, going toward more renewable energy will help us foster both economic security and independence -- energy independence for Vermont. It's clear we are heavily dependent right now on sources outside of the state. While that will probably continue to some extent into the future, we would like to be a regional issue, not an oversees, dependent upon other, more volatile areas. We would like to keep dollars closer to home. And we should be able to do that by moving toward more renewable energy. It also helps our environment.

Adaptation is obviously an issue we are having to deal with right now. Many people feel that the storms we have been seeing are not just a coincidence. What we can be sure
of given the global warming that we have already seen is that we are going to be dealing with this for some time in the future. And what we need to do, in our view, is to safeguard our environment by making choices that improve the situation for future generations. And moving toward renewable -- more renewable energy will do that.

Third, driving innovation and jobs creation. We have a number of small business enterprises in the state already in various renewable energy sectors. Biomass, solar, Northern Power Wind, for example, and by setting a goal and saying Vermont is in for renewable energy, we can send a message to the job creators and innovators that we are open for business for renewable energy.

And finally, the benefit of moving toward more renewable energy, of implementing the land use suggestions we have as well, is increasing a community involvement investment. In other words, if we are all thinking more holistically about our energy usage and how that energy usage
affects not only ourselves but our 
environment and our neighbors, then we are 
going to help increase community 
involvement.

Okay. So the how. I would like to use 
this slide to explain the how. At least in 
graphic terms. We are looking for an 
acceleration curve here as we head toward 
the future. We are not looking for straight 
line progress. And there is a simple reason 
for that. Straight line progress is not 
going to get us as far as we need to get 
because it's going to be more expensive now 
than it will be in the future. And we also 
need to set the table like for 
transportation, for example. We couldn't 
possibly move in a straight line on 
transportation. Because we are just now 
starting to see the electric vehicle 
industry flourish. And we are just now 
starting to see in biofuels, for example, I 
don't know if any of you heard the report 
yesterday about the military's fuel usage. 
And for those of you who follow military 
history what you will see is military does
have a history of leading in certain sectors, including energy. And that's why linear progress when you know that the military is committed to using biofuels in their jets, when you know that they are moving towards solar and other forms of renewable energy for their bases, we are going to see the acceleration curve. We need to keep that in mind, because we don't want to be discouraged by a lack of linear progress in the early years. We have to set the goal in the long term and set the policies that will get us there in the long term.

So it's also important when you're doing this, and this was, I think, a real theme of the plan not to just focus on one piece of policy and exclude others. You need to really think about policy holistically, and so we tried in the plan to address four different things when we talk about any policy. How we are going to reach people with why you were doing this. For efficiency for example. It's not enough just to say, oh, save energy. You have to
tell people why. It helps not only your pocketbook, it helps your comfort, it helps your home and your environment. You have to also help with finance and funding, so again efficiency is the example. The PACE program which was passed or helped last year by the legislature, is an example of providing a financing mechanism for people that would help with efficiency.

Innovation and expertise. You have to set the plan in place that will allow for this curve to start. And if you don't address innovation and expertise when you're setting a plan, you won't get that progress. And then finally you have to look at regulatory policies and structures. You can't just look at that however. You really do need to look at all four if you're going to make the type of progress we are talking about. Because 90 percent renewable by the mid century, I know that is a long way off, but it's also a big goal. It's going to be transformative. We have to see it that way, and we have to start thinking all sectors.

Okay. So speaking of all sectors.
Really quickly because the plan is long, and I really want to hear your comments and somebody tell me what time it is.

MR. WARK: 7:30.

COMM. MILLER: Okay. On efficiency, it's the first thing for every sector in the plan. First thing we discussed is efficiency. One big thing we recommend is that in the next year, one year, we need to sit down with all of the stakeholders and the Agency of Human Services and look at all of our efficiency programs together and say okay, how do we make them more accessible. And then how do we deal with the funding mechanism? And the third thing is actually measurement and tracking. When we started looking for this planning process at how far we have gotten towards the 80,000 home goal, there wasn't a lot of data. So we are specifically committing to measure and track it. And we are suggesting that the state put together a road map within one year for rationalizing the programs that are delivered. Before making the decision as to whether and how to add more funding we need
to rationalize the programs.

We are also, on electricity efficiency that is, calling for additional progress. I think I said before we have had about two percent growth in efficiency in the recent years. We have advocated at the Public Service Board for a better progress than that, toward three percent annual savings. And we are doing that because we do think the economic case for efficiency is compelling. Why three percent and why not just go for 10 percent or something like that? Because you actually need programs in place that can support the progress that you're making, and we think that increasing to the number that we are suggesting is the right way to go because it puts us on a path to obtain more efficiency over time.

On thermal home heating, we suggest that the state double the number, the percentage of Energy Star homes, new Energy Star homes in the state by 2020, and use that as a path to encourage net-zero new construction for homes and commercial buildings by 2030. That's not an easy goal. That's going to
take a lot of work. But it's a time period in which we can set the path to get it done, and the Energy Star program is an interim step that will help -- will help us do that.

We also have at the Department of Public Service right now a project ongoing supported by a federal grant to look at enforcement and effectiveness of our residential and commercial building energy standards. And that will help in this process.

Okay. Electricity. Again I've said before, we are going to set policies to not just increase new renewables but also maintain existing progress. It's not just, you know, 20 percent new renewables. It's 75 percent, 80 percent, moving toward the 90 percent total energy goal, and a lot of that will be supported by the increases in the electric sector. Specifically, I know this is hard to read, by the way this will be on line. The Public Service Board is doing a draft study right now of what's known as a Renewable Portfolio Standard. It will be finished in October. The PSB draft suggests
a 75 percent total renewable standard. The department knowing that that was a scenario that the Board was looking at modeled the 75 percent renewables in our high efficiency high renewable case that you'll see in the energy plan. And we do believe that that's achievable, and that the state can set a path to achieve that in a way that's both affordable and realistic.

You need to couple, in our view, any renewable energy big standard with programs that are designed to promote in-state distributed generation. And it shouldn't just be that you use the Renewable Portfolio Standard to do that. You should have other policies because you want to make sure that the total electricity portfolio remains affordable. And so in order to promote the in-state distributed renewable generation, we are suggesting that the legislature look to build upon the standard offer program that was put in place to do a next generation, and we would like to see a market-based mechanism for implementing that standard offer.
We also suggest in the plan some process improvements. I heard a lot of folks at our meetings talk about the process for renewable energy siting and wanting the process to improve. And so there is three specific things that we are suggesting. One is we are going to, at the department, put in place a renewable energy project manager, somebody who can coordinate with the stakeholders, the interested parties, the developers, and the agencies in state government to get renewable projects completed in an appropriate manner.

We are also suggesting that the Board move to a mediation process in all siting cases. The Public Service Board has not traditionally undertaken mediation, as you know, you see in family court, in civil court. And we think that siting would be a good place for that to happen. And when I say siting, I mean wind projects, solar projects, transmission projects, anything that's siting energy on the land at the Public Service Board.

And we are also committed to reviewing
some of the recent experience especially
with the smaller-scale projects, to
determine whether we can simplify some of
the process. For example, on the solar
projects we have now had a number of around
two megawatt solar projects go through
permitting. Some of you may have driven by
the one in Ferrisburgh. I know you know of
several around the state. And I think we
now have a system in place where we can look
and say okay, that's been about a
seven-month process. Is there a way which
we can actually make that a little bit more
simple and a little bit smaller for that
size of project?

And then finally financing and funding
for electricity. We are going to -- there
is a state allocation for qualified energy
conservation bonds. We are committed to
getting that out the door. It's about six
and-a-half million dollars of bonds that
have been allocated to Vermont. The Clean
Energy Development Fund has a new board, and
the first thing they are doing, they started
in July. And they will finish by next July,
is creating a strategic plan for Clean Energy Development Fund into the future. Because its current funding source runs out later in 2012.

And then we are also suggesting that we work with our utilities to develop what's often called on bill financing, so Vermonters who want to can decide to finance improvements in their home through their utility bill. And then finally transmission and regional markets, it's described in the plan. We in Vermont are really reliant on the regional market. And in our view, we don't yet participate as robustly as we should. That's the bottom line. So we suggest some ways to focus our participation in the regional market.

Thermal energy. Again, I said one of the things we want to do is improve the existing programs by getting everybody around the table and saying okay, look, we spent a lot of time and effort in Vermont getting the electric efficiency program right about a decade ago. Can we spend the same sort of energy looking at our heating
efficiency programs and integrating them.
So that Vermonters, you know, as a homeowner
I don't care whether an efficiency measure
I'm putting in place will save me
electricity or save me heat. I just want it
to make my home more comfortable and help me
save money. So that's the purpose of trying
to get everyone around the table and make
these programs work together better for
Vermonters.

Also increasing access to natural gas.
For thermal it offers a choice for
Vermonters that only a part of the state
currently enjoys. Right now about five
percent of our energy profile is natural
gas. So when you think big picture, at our
90 percent goal, I like to point this out.
Obviously natural gas is a fossil fuel.
It's about five percent of our usage right
now. There is significant room even under
current usage scenarios for natural gas.
And natural gas does offer the possibility
of a heating choice for Vermonters, price
right now and projected into the future is
good. There certainly are trade-offs.
There is trade-offs with everything. We do suggest that natural gas is something that should be expanded for heating purposes in particular. Also there is -- it's possible for electric. There is nothing specifically in the plans right now for that. But there is room for that should something come up.

Increasing use of biomass though at the same time and biofuels for heating. Again looking at what we know now about biofuels and what we might find in 10 years with increased use, I think we are going to see a lot more availability. And there is already a nascent biomass industry here in Vermont. We are one of the leaders in using wood for heating our schools. We have some district heating projects, as you know, in Middlebury ongoing right now, in Burlington under study. So biomass is an area where we can really turn our thermal picture around with increased usage over time. And that includes combined heat and power projects which are projects that use the heat put off from electric generation to actually heat a business or an industrial process. And if
we are going to do all of this, we have to think about our current infrastructure and how that will work with the future. And so we in the plan suggest that we really need to think about transitioning our local fuel dealer industry toward energy service providers into the future. In other words, if you have somebody delivering oil to your house right now, well there is no reason why that same dealer cannot, as we transition over time, deliver the chips or the pellets, or provide you the efficiency services, or the audit in the first place for the efficiency. And that's -- we have to think that way in order to make sure that we don't strand Vermonters who are in the fossil fuel industry now, in a place 20 years from now that they shouldn't be.

Okay. Transportation. As I said before, it's our biggest greenhouse gas challenge, and it's not just one thing. You have to think about the vehicles you're driving, the types of vehicles you use, vehicles -- miles traveled and how much you're driving, whether we have transit
options, system operations options to help with greenhouse gases, and I have VTrans' symbol down there again. Thank you for the slides. I didn't make the stool myself, so I appreciate that.

MS. CAMPOLI: We didn't either.

COMM. MILLER: So the transportation section of the plan is very well put together and has a number of very specific recommendations. So this is just a quick overview. It represents our largest cost. We spend about a billion dollars a year on transportation. About 2.5 billion dollars overall. So I know I'm giving you a lot of facts, but the bottom line is transportation is costly. It's also our greatest use of fossil fuels, and therefore our highest contributor to greenhouse gases. So the key to setting this 90 percent goal is the ability to transition transportation towards renewable electricity, and it's going to require a lot of policy changes over time. Financing right now, not just we, but nationwide, we finance our transportation system with the gas tax. That's not going
to be just a Vermont challenge. That's going to be a challenge for other states as well and something we have to address.

Vehicle charging, both specifically at the homes as well as the infrastructure for it on our highways and businesses. And then, of course, the technology and the cost. You know, it's not going to help if electric vehicles can't compete with vehicles that Vermonters otherwise can afford. So we have to again in part rely upon the acceleration curve, and we aren't one hundred percent in control of our destiny when it comes to this, but that doesn't mean that we shouldn't set policies encouraging it and move toward it.

In the meantime, we have to continue to push for better fuel standards, and we are doing that; greater access to commuter facilities, and a reduction in the vehicle miles that we have to travel. And there are -- again there is some specific things the plan suggests. One is to figure out what our combined average fuel economy; is that right? For Vermont registered vehicles.
And then set a goal to meet the national average if we are higher, or five percent improvement on our own, whichever is greater by 2025. That's something that we haven't yet measured, so we don't yet have the data to get us there. But VTrans has committed to saying, you know what, this is something we should do, and here's what we can do to help in the interim while we are trying to electrify transportation.

Triple park and ride spaces. We heard many, many comments not enough park and ride. VTrans has done a lot of work surveying the park and ride situation both in terms of the numbers currently available and the usage, and we know that tripling the number would help significantly. And by doing that, you can help reduce single occupant commute trips. VTrans projects that we can move toward a 20 percent reduction in 20 years if we set the right policies in place.

I just want to give a pitch to Go Vermont. If folks here haven't been to this site, we all frankly should register. It's
a great site. It gives you not just traditional transit information but also information on ride shares and biking, walking and alternative transportation. So great site, and it's a real resource when you talk about outreach and education could be better promoted.

And then finally land use. You know, again land use if we set -- we have programs in place that are designed to preserve our rural character, conserve our natural and historic resources, support development in the right places, and invest efficiently in our public infrastructure, the infrastructure that we all use. All of those things which really make Vermont what we think of as Vermont, also will benefit our energy usage. Because again, if we keep our growth more compact, in town centers, we will help our energy usage. So for specific ideas and again, Agency of Commerce and Community Development was instrumental in the energy plan in this area.

We want to see better coordination with the regional planning commissions and the
town energy committees because that's where the real on-the-ground work happens. And ACCD has suggested that we commit to actually review with the RPCs all of their plans for conformance with the State Energy Plan within the year. That will really help, and it will also help bring it down to the town energy committee level if we can do that. ACCD is working right now on improving our state designation programs and what that means is the -- improving the programs that we have to encourage development in our town centers and downtowns. And they are working on a plan right now that they will finish by the end of this year that will recommend steps for implementation.

They are going to measure the success by looking at the next census. You remember I told you that this latest census showed that we are not improving in our downtown areas our population rate as much as we are elsewhere. They want to see increased density in the next census. And that's a measure that will show that we made
progress, and then make sure that our state incentives and programs actually align. If we have an incentive, for example, policy on waste water, is that consistent with our downtown programs. There is some transportation examples as well. If we have policies on intersections and road builds are they consistent with or not, our designation programs to support downtowns. And so coordinating those incentives will help.

And then finally, actually getting out on the outreach and education specific training programs for the recently passed Complete Streets legislation. Also the transit-oriented design program, in partnership with VTrans and others, and ACCD is committed to holding three workshops for that purpose in 2012.

Again these are just initial steps. But they are the steps that will help us accelerate the curve. Okay. And then finally there is a few other things in the plan that if anyone has yet had the chance to dive into, I would be happy to talk about
tonight. One is a suggestion that look, it's fine to focus on each sector, and then it's great to try to plan them all together. But if you're going to do that, one thing that has been suggested, and we think is worthwhile to pursue, is looking at whether the state can actually set up what's called a total energy standard. Looking at total renewables and setting a goal and then measuring progress and setting incentives for that progress. Hasn't been done in the United States. Vermont would be a leader if we got that done, but we should study it. And we suggest that that's a way to go to get the progress that we are looking at.

Farm energy programs. The plan sets forth a number of ways that we can help our farms produce energy for themselves and for the rest of us, and help their pocketbooks, their livelihood at the same time. And then finally there is quite a bit in the plan, and buildings and general services department took the lead with this on the State of Vermont leading by it's own energy usage. The Governor set a goal of a five
percent energy reduction across agencies and
departments last spring with the Speaker of
the House. Buildings and general services
is setting a plan in place right now to
achieve that. It's going to roll it out to
the other agencies and departments so we can
get that done.

We have recently done a Request for
Proposal for energy projects on state
buildings. So that's another area of
progress. There is also ideas in the plan
with regard to our state vehicle fleet and
our building, and this has been on the minds
of everybody in state leadership
particularly post Irene as we look at the
displaced workers that we have and what we
can do moving forward to improve our state's
energy usage, you know, turning essentially
the silver lining in the cloud, working with
landlords, working with our own buildings.
So there is a lot in the plan about state
energy usage.

Okay. So we are doing public hearings
now. I would love to have public written
comments, if you have any, submitted by
October 10. So that we can revise the plan as required and submit it to Governor Shumlin by mid October when he wanted to see it. We are then going to review the feedback from the Governor's office and do our final revisions.

Our plan is to have it buttoned up and done in November. I mean that's the hope. We really want to have this rolled out for Vermonters and for the next legislative season so we can start making the progress. And to actually implement it, the Governor has asked that the Climate Cabinet be charged with the oversight. It's a great spot for this because, of course, it is across agencies and departments, and it's mostly the agencies and departments that we have talked about here tonight. ANR, VTrans, Department of Public Service, Agriculture, and so the Climate Cabinet will oversee implementation.

We are going to present it to the legislature this coming January. We are going to provide in the final plan a list of possible legislative actions so that the
large 400-page plan has a more manageable list for the legislature. And then we are going to work with the regional planning commissions and town energy committees to make sure that they have seen the plan, that we work with them, as I said, on aligning their own plans with ours.

And then we are also committed to making sure that we review this more often than has occurred in the past. Specifically the legislation requires us to revise it every five years. Although the Comprehensive Energy Plan has not been revised since 1998 formally. We think that a three-year goal would align better with other things the state does, and so that's our suggestion, and probably frankly a suggested legislative change, make us do it every three years. So again thank you for coming. I'm sorry that was long.

Like I said, it was my first time, so feel free to let me know afterwards what you feel I can cut. Here is our web site. Vermont Energy Plan, VTenergyplan.Vermont.Gov. My name, E-mail and number. Feel free
to give me a call. Thanks especially to Transportation and ACCD for some of the slides here and ANR and all the other departments for the hard work. Thanks very much.

So what I would like to do if -- I don't know if, Matt, if you have the list. But --

MS. LAUNDER: I have the list.

COMM. MILLER: What I would like to do for those of you who signed up to speak first, and then if anyone else who didn't sign up wants to take a shot after that, certainly given the number of folks who are here we have time. I would like to just invite you up and ask you to let us know what you think about the plan. And given how few of us there are here tonight, I'm certainly happy to engage in a little bit of conversation if that's appropriate. So first Tom. Is it Tailer?

MR. TAILER: It is.

COMM. MILLER: Great.

MR. TAILER: I'm really impressed with the scope of the plan. I attempted to read it all and didn't give it the detail that I
should have, mostly on the bottom section.
I'm Tom Tailer. T-A-I-L-E-R. I'm on the
Essex Town Energy Committee. I am a local
physics teacher. I am a Board of Director
of Vermont Sustainable Heating Initiative.
I'm also Co-director of the Governor's
Institute of Engineering at the University
of Vermont and just returned from the fifth
annual International Earth Science Olympics
in Italy working with sustainability with
students from 25 countries.

Tonight I want to focus on the biomass
issue. Going to start with the economic
impact. There are currently several plans
being circulated around the State of Vermont
to use biomass in a variety of different
ways. The ones that bother me the most are
electric generation from biomass. The truth
is that this is a political entity or state.
We deal with the politics.

An old Vermont farmer a couple of years
ago up in the Northeast Kingdom looked at
windmills on his ridge lines and said;
what's this going to do for me? The
question with biomass is if we generate
electricity with the Vermont's biomass it's not going to lower your electric rates. It's not going to save you money. It will create jobs, but it won't save you money. If we do other things with the state's biomass, it will save you money and create jobs. So I'm going to talk in more detail about that.

If we took all of the state's biomass and generated electricity with it, it wouldn't be a significant dent in our electric demand. It's not going to replace Vermont Yankee. However, if we took the sustainable biomass harvest and turned it into wood pellets, which is existing technology, we could replace approximately 200 million dollars a year in fossil fuels used for heating. That 200 million dollars a year, that's real economic stimulus. It would create jobs, and that means you get a multiplier effect conservatively of around 3, which then turns 200 million into 600 million bucks a year. That's what Vermont needs.

The question is who is going to own
that. I have done a variety of analyses with my students. The other analysis that I want to point out is this study which was funded by the Chittenden County Regional Planning Commission. I have been working on this for about two years. BERC just published this last month, and I'll make sure that you get access electronically to this, that is blueprint on how to set up a pellet industry in Chittenden County.

One of the things we addressed is using woody biomass as well as grass energy as a possibility. But the deeper question is how do you set it up as a business model. If you set it up as a business model as a straight for-profit corporation, you run the risk of in the long term not supporting sustainability of the ecosystem. So to me the way to have the largest economic impact for Vermonter is to have the pellet industry owned by local people as a community resource, because it's the community that will maintain the sustainability of the forest resource. You're closing the loop between using the
resource and harvesting the resource and
providing the jobs. And that really should be a closed loop.

In the study, the State Energy Plan, it uses the word sustainability, but sustainable is a slippery thing to define. The definition that was around 10, 20 years ago is very different taught at the University of Vermont today. I think we need to have a clear definition and recognize the change in the definition. Sustainability in terms of environmental systems implies evolution and ability to adapt to changing conditions. I think we need to reflect that.

The other issue that really scared the daylights out of me when I researched it was a BERC study that said there is about 200 million green tons of biomass sustainably harvested per year in Vermont. That’s a lot of mass. 200 million green tons. Visualize a really big pile. However 1.1 million of those tons are already allocated either to McNeil, or to the forest industry, or for other stuff, wood chips, wood pellets, et
cetera. That leaves about 900,000 green tons. Still a big pile.

However, there is 600,000 Vermonters. That is only one and-a-half green tons per Vermonter. I talked to -- I used to have a neighbor, Andy Potvin, he passed away a couple years ago. But that number would have scared him. Less than 3 quarters of a dry ton per Vermonter per year. The question is to all of you sitting here; what do you want done with your 3 quarters of a cord? There is not enough firewood out there to heat Vermont. If we had to switch over to heat Vermont right now, that would scare the darelights out of the old-time Vermonters that I know. What that means is we need to use this resource really carefully, now, not just in the future, but now. And to me, again the idea of burning it to generate electricity is not in the best interest of Vermonters. I'm going to say that a lot, and I'm going to say that in Montpelier because it's a political statement. What is going to be the best interest of Vermonters.
What we need is research. We need research and sustainability in terms of forest resources, in terms of methane and carbon cycles. How are we going to fund that research? To me the way to fund it is to set up a charter, non-profit pellet industry in Chittenden County, owned by Vermonters. The capital cost to set up a pellet mill is about $200 per ton capacity at a 75,000 dry ton per year plant. So that means that average typical Vermont house might be three tons of pellets a year. They buy the co-op, they own it at about 600 bucks for three-ton capacity, and that's going to close the loop.

Vermonters are very environmentally aware people. We don't want to trash our forests.

Recommendations. Five percent of the pellet production should go directly to low income Vermonters. I've worked with Richard Moffey (phoenetic) and the Vermont LIHEAP program for a couple of years through the Vermont Sustainable Heating Initiative. As a pilot project we have installed 17 pellet
stoves in low-income Vermonters' homes to transition them off of old, inefficient wood stoves and fossil fuel stoves to more efficient, cleaner burning pellet heat. That program works. It works really well. Most of the time everyone is very happy. The problem is that right now Vermonters -- the poorest Vermonters are using the most expensive fuels with the greatest environmental cost. Desperate Vermonters, long-term Vermonters to stay warm will burn trash, trash wood, pressure-treated wood in old, inefficient wood stoves. The good thing with the pellet stove is they are 85 percent efficient. Pellets are really clean. 99 percent combustion efficiency.

Another recommendation is that the charter non-profit facility in Chittenden County have a research requirement. And that research means you work with UVM and Middlebury and VTC on several things, establishing new technology, monitoring to really look at what is the sustainability of the system. What are the most efficient fuel delivery systems. You worked with the
Vermont Fuel Dealers Association with that. Also look at the total energy return on energy investment and the total system efficiency. And that type of research needs to be done before we do a whole lot of investment in infrastructure. You start in Chittenden County. Why? Because that's where the demand is. If you have to make pellets and ship them by truck more than about 50 to 80 miles, the cost/benefit goes way down.

So there are some pellet -- low-cost pellet buyers that buy pellets from Green Mountain Pellet Makers down in southern Vermont, they ship them all the way to Boston. They do that because they are like designer coffee connoisseurs, pellet connoisseurs. That's not cost effective.

The other thing is with Beaver Wood they are looking at making some pellets, but they are looking at probably putting a rail line, and they are going to sell pellets to whoever is going to pay the most money which means again how is that going to benefit Vermonter.
We need to evaluate not just biomass use but all energy systems by total system efficiency. That doesn't mean thermal system, but looking at everything from cutting down the tree, transporting the biomass, processing it, drying it, and finally the fuel allocation distribution. All of that needs to be taken into account in looking at really what is going to be in the best use of Vermont.

Also energy return on energy investment. You know, how much fossil fuels do you have to invest to be able to offset fossil fuel savings. One of the issues is that if we take large biomass processing, we are going to end up bringing biomass in from outside the state and shipping it all over the state. That is a real problem in terms of invasive species in terms of insects and spreading seeds.

My recommendation is that Vermont establish six biomass exclusion zones and establish six biomass processing districts within those zones to be aware of the invasive species and try to limit them as
soon as they are identified. You don't want to establish -- make a million dollar investment infrastructure that mandates that importation of half a million green tons of biomass from Massachusetts and New York into Vermont. That's just a bad idea environmentally.

Finally, we need to establish standards for pellets. Right now there are industrial standards. They are meaningless. I've worked with long-term Vermonters who bought premium quality pellets and they weren't. It's a real environmental problem.

Again, if we are using the biomass in our communities and producing it in our communities, it's in the communities' best interest to have a high standard, to implement it, and Vermont can again become a national leader in that.

Again the funding for this, my recommendation is to establish one facility, about 75,000 dry ton per year capacity, mandate it as a research facility. Make sure that it's a co-op, non-profit, locally owned, has the links to the rest of the
state. Get that up and running for about
two years, and then use that as a model to
expand. Thank you very much.

COMM. MILLER: Thank you. Is it Fred
Dunnington; is that right?

MR. DUNNINGTON: Yes.

COMM. MILLER: Forgot to ask, did Tom
tell you his --

MR. RECCHIA: He did. He spelled it
correctly.

COMM. MILLER: He spelled it correctly.

That's great.

MS. LAUNDER: I checked everyone's
handwriting. Everyone did really well. So
they don't have to all spell their name.

COMM. MILLER: Thank you.

MR. DUNNINGTON: I'm Fred Dunnington
from Middlebury. I'm Town Planner in
Middlebury, and the chair of our town energy
committee involved with regional planning.
We have other people from our energy
committee here. There is some.

And I was very impressed with your
comments just now. I have nowhere near
anything as eloquent as that. I really came
to learn about this. It's quite an overwhelming plan to try to -- I really was interested in more asking, you know, what does it mean for Middlebury. Last count.

I appreciate your offer to engage us in conversation about that. I don't really need to talk about our initiatives particularly, but I was interested in would there be resources that would come down to the region and community level, or is this mostly oriented toward state action? I have looked in the plan for places where, you know, it referred to communities and regions, and I saw pieces of that in the transportation section. But I was sort of looking for that in other parts. And I need to look more closely and think about that.

I would also say your presentation was very good. And --

COMM. MILLER: I'm looking for criticism.

MR. DUNNINGTON: No offense to transcribing, but I think a video of that that could be shown around would be much more accessible. There is a lot more people
out there than just ones who could come tonight.

MR. RECCHIA: We should have videotaped it.

COMM. MILLER: I would have to tighten it up.

MR. RECCHIA: It was a good idea.

MR. DUNNINGTON: Renewable site. That was something I thought about. In the world of reviewing local projects, and sometimes think of as NIMBY management, I hate to characterize it that because that's -- there are genuinely bad projects that deserve to be criticized, I suppose. But I often wonder why we don't challenge regions to site, you know, some number of things that -- whether those be PV solar or other projects and encourage everybody, challenge everybody to do this rather than subjecting them to it, and maybe the best of those could be candidates and selected.

If you ask every town, I thought of this years ago, back in, you know, sanitary landfills, I thought every town ought to be required to site a sanitary landfill and
deal with that. And better ones could be selected or something. That's ancient time.

COMM. MILLER: It's not a full answer to that, but I'm not going to find the page cite quickly, but we do have a suggestion in the plan to look at what -- I don't know what you would call it -- maybe a community-scale portfolio standard. And probably communities who wanted to do it, to not just have -- community scale portfolio standard where communities who want to do what you're talking about, not only could put the projects in place, but then benefit from them. Share in the cost and the benefit and make the choices. So I do think that's a great idea.

And it's not directly in the same way you just mentioned it addressed in the plan, but it is in there.

MR. DUNNINGTON: So let's see, another comment I picked up on. Reviewing regional plans for performance by next July. I just think of how long it takes for a regional planning commission to even prepare a plan, to change something.
COMM. MILLER: Too quickly. Okay.

MR. DUNNINGTON: And then the notion of conformance, what does conformance mean. For a plan, some of the plans are at best policy, and a lot of them just information. And they are able to be what they are able to be, but that's not very much I guess I would say. Could be less charitable about it.

MR. RECCHIA: Don't forget the court reporter.

MR. DUNNINGTON: But you know, what does conformance mean really? I mean I'm trying to -- I suppose I could worry about that but --

COMM. MILLER: I should look at the big plan to see how it's put in the land use section to make sure that my own Power Point word isn't part of our problem.

MR. DUNNINGTON: Well I'm just remembering a time back when it was thought that it would be a great idea for us to have statewide goals, and all town plans should be, you know, in conformance with those, and regional plans and town plans should be in
conformance. And this is like three-dimensional chess. And I actually found myself on an early board. It was charged with doing this. And I was terrified that, you know, trying to figure out how everything could be in conformance with this and consistent with the goals could work out. And many of the plans quickly adapted to policy plans which were sufficient enough that you couldn't really tell. So while I'm desperately eager from years of working as a planner to try to see things that really are clear bullets, what does it mean, what is a town or region going to do? And conformance is -- it's a well-intentioned concept, I'm sure. But I really think we are looking to this plan, what do you need as a county, what do you need Middlebury to do?

COMM. MILLER: And the time line isn't good either from your point of view.

MR. DUNNINGTON: Well I would just say time to achieve the lofty goals you've set --

COMM. MILLER: Well it's incremental progress, so it's not as if we would have a
plan by July to -- but it is -- yeah.

MR. DUNNINGTON: Anyway, some of that's off the top of my head.

COMM. MILLER: Do you have a suggestion on timing that would be more appropriate given all of your regional planning experience? Just for --

MR. DUNNINGTON: No.

COMM. MILLER: -- just for the deadline? Because that's at least something concrete.

MR. DUNNINGTON: I think engaging and challenging them. This is a two-way conversation. And some of it has to relate to what can you afford -- what kind of resources go with that.

COMM. MILLER: Right.

MR. DUNNINGTON: So I can't answer that in the abstract.

MR. TAILER: My recommendation is to engage in an ongoing discussion. I know you talked about three-year revisit, but I think the concept of sustainability and concept of renewables need to be a continuously ongoing discussion. So you may have goals for planning within a very short time frame, but
then probably have a phase two one year out.

MR. DUNNINGTON: And I'll probably think
of -- I came to really listen. I may think
of more things to say.

MR. RECCHIA: Don't go away, Fred. This
is Chris Recchia. And I can spell that. R-
E-C-C-H-I-A. It took me awhile to learn how
to spell that, but I can do it. So thank
you for your comments.

Particularly what caught my ear was
what's it mean for communities in terms of,
you know, is this a state plan, are there
resources. And I just want to say that's
one of the most challenging aspects of this.
We have a very big vision for how to change
Vermont and our energy portfolio and how we
use it and how it benefits Vermonters. But
we are also doing this in a time when there
is no money. I mean the concept -- the
general concept is there is no money.

Now the reality is, as Tom pointed out,
we spend a lot of money already on energy.
And I really would be interested in what you
guys think about this and for ideas and
suggestions on how to leverage that differently. You know, we spend 800 million dollars a year on transportation and heating oil. It goes out of this state. No benefit really. Some benefit to dealers and distributors, but not a lot. Is there something that we can do to leverage some of that money to help direct us in a different way, or are there other sources of money that can be used in terms of private business development, or what is that it takes to actually make this happen?

And it's been a real challenge for us. And there is no magic bullet, but things like, you know, the district energy projects that you guys are working on. They are great and exactly what we are looking for. How do we pay for those? How do we help you pay for those?

MR. DUNNINGTON: Not the property tax.

MR. RECCHIA: Okay. Thank you. So we have --

MR. DUNNINGTON: I was just going to start by saying I've long believed that paying the true cost of driving when people
can see more directly the real cost of something, it influences behavior. We have many more miles of road in Vermont that are maintained by towns than we do state miles. And the gas tax is a state thing and some of that comes through the towns.

But if you think of apart from schools, local budgets are driven by, you know, what we pay to build and maintain roads, and in regional centers to police motor vehicles, about half of our police budget is policing motor vehicles. So you know, if you wanted to achieve a measure of property tax reform and could shift away from that, you know, what happened when the price of gasoline went up? It influenced behavior. Those graphs are more I think a result of people freaking out at four dollar a gallon gas.

Well I think if there could be, over a longer period of time, some shift, I know they are talking about using the gas tax to fund Irene and all kinds, so it's -- maybe this is totally off the wall, unrealistic. But you know, we are subsidizing driving through the property tax. And it's very
hard in terms of people's ability to pay, 
stay in their homes. I would like to 
transition away from that somehow if there 
was an -- even if it took 10 or 15 years. 
People knew gradually there is going to be a 
shift in that. It would influence behavior. 
It would influence the kinds of cars they 
buy, where they live next. And that would 
help.

    MR. RECCHIA:  Okay.

    COMM. MILLER:  Thanks.

    MS. CAMPOLI:  That wouldn't come at the 
local level. What I'm interested in hearing 
is how we can benefit -- Gina, G as in 
George, I-N-A, Campoli, C-A-M-P-O-L-I. How 
we can better flex the planning dollars we 
have now via transportation through ACCD, to 
start looking at the questions and issues 
around energy which has traditionally not 
been so much of a part of the focus.

    I know in the transportation world it's 
about congestion mitigation and getting 
projects completed as opposed to thinking 
about transportation much differently.

    MR. DUNNINGTON:  Well I have to say that
it's nearly excruciating to watch how
difficult it is for transportation dollars
to actually achieve projects. And we in
Middlebury had the chance recently, and this
is some out of desperation, after 50 years
or so of naming the project as a region
priority, a town priority, we found a way to
do this. And we would have done it all by
ourselves, but we took an opportunity to
partner with Middlebury College as well
which made it a much better project.

MS. CAMPOLI: I remember that project.

MR. DUNNINGTON: We built a bridge in
town that was about investing in downtown,
about access to the downtown making
walkways, opening up sites for downtown
development. And we were able to finance it
totally without a single state or federal
transportation dollar.

I have to tell you that this was done
through a one cent local option tax. And
the legislature was eager for us to do this
because they get 30 percent tribute when the
town has a local option. It couldn't be
additional revenue, that was good.
For Middlebury we are a regional center, so having people come to the center of the region to buy things, you know, through this local option, sales tax, rooms and meals, they were helping to pay for a regional facility. That was a fairly easy sale. Politically.

The one cent, you know, on rooms and meals, 10 cents on a 10 dollar lunch didn't really, you know, cause a lot of turbulence out there. I don't think people realized -- recognized it.

The reality is that the base of the sales tax is the sales tax on your electric bill, and your cable TV bill, and your telephone bill. We don't have a lot of retail here. So we pay for this bridge, half through electric sales tax. That isn't a real clear, direct way to pay the true cost of something. I probably shouldn't tell you that. But that sales tax base you know is -- anyway, there is -- we had to do what we had to do. We were able to do this very efficiently, to get back to your point about the Agency of Transportation, I wish
could utilize, design a bill, I wish it could mobilize local people and in a way that we were able to, and compress the time frame of projects and do them as efficiently. Because it's just excruciating to see how many years and how much the costs go up, and I don't know what you're going to do with the transportation challenges of Irene. I can't even imagine. But that has --

COMM. MILLER: Another conversation.

MR. DUNNINGTON: A whole conversation to itself. And I don't know how to answer your question about transportation planning for efficiency. We are so -- Irene's going to suck the air out of the room on transportation for awhile to come, I'm afraid.

MR. RECCHIA: Thanks Fred.

COMM. MILLER: Thank you. So there is four other individuals who signed up. I know there is more than that here. So time being what it is, let's see if we can move through some of those. Bob -- is it Bob? Is it McNary?
MR. McNARY: I'll pass for now.

COMM. MILLER: Thanks Bob. Laura Asermily.

AUDIENCE MEMBER: She left.

COMM. MILLER: Okay. Well this is going to be a lot easier. We have Shelly McNeal.

MS. McNEAL: I'm here.

MR. RECCHIA: Did we scare you?

COMM. MILLER: No.

MS. McNEAL: Excuse me?

MR. RECCHIA: I thought maybe we scared everybody off from talking.

MS. McNEAL: I don't scare easy.

COMM. MILLER: Can you for the court reporter just spell your name?


Hi. I serve with Fred on the Middlebury Energy Committee. I'm a novice. I just joined this year. I'm from Connecticut. I moved here four years ago, and I was very active in my community with energy. I work for General Electric, and so I have a broad technology background, and so I just have a bunch of questions.
I guess my first question is I was struck by the goal being out to 2050. I'm just wondering why so far out. It's 40 years from now. And you know, especially when you talk about the exponential curve of technology, and where we all know how quickly things go up the curve, you know, with telephones, Internet and cell phones. It's really a short window. So I guess my question is, you know, why 40 years? What is the inertia factor there?

And then also then I have another part to that question as to, you know, when technology does change, how do we dispose of the older technology in a safe and efficient manner?

COMM. MILLER: The second part is an interesting question that we should get some guidance on from your background probably. And you probably have good ideas on that.

MS. McNEAL: We're looking at that now actually.

COMM. MILLER: For the 40-year goal there was, as you can imagine, a lot of commentary we received in the planning
process about what sort of goals should be in the plan, on what time frame, for what purpose. And there is a tension, frankly, between setting a goal in a shorter time frame and figuring out what the achievable short time frame is for that goal versus saying, wait a second, generationally we have got to change things. And so how do we tell Vermonters that's what we plan to do, and set the big goal out further in the future where we do expect acceleration to allow us to achieve it.

Frankly, we had a lot of Vermonters ask for a goal of 80 percent all renewable by 2030. You may have seen some press on that. And there was a big discussion among the agencies and departments about whether that was a goal that should be part of the State Energy Plan. And there was significant concern in -- among certain folks working on the plan that it was going to be very difficult to achieve the goal. And one reason for a longer term bigger goal is to allow the time for the progress and the incremental changes to take hold, and to say
what we need is the big picture vision, this is where we want to go. So whether it's 17 percent five years from now, 25 percent five years later, or instead three percent to 30 percent because technology takes off, what we want is the long-term goal.

So that was the thinking behind the, you know, looking out a couple generations and saying this is what we want for our kids and grandkids, rather than setting a shorter term goal of X percent by, you know, 2020 or 2030. In certain sectors in the plan it -- specifically electric -- you will see different goals, numbers goals. 75 percent renewable is a model that we ran for the plan for electricity in 20 years.

MS. McNEAL: Okay.

COMM. MILLER: And you know, when you look at things like transportation and try to predict the future, it seemed again looking at across agencies and departments that it was difficult to do unless you said, you know what, we can't know everything that's going to happen, but what we know is what we want to achieve.
MR. RECCHIA: Can I just add to that quickly?

COMM. MILLER: Yeah.

MR. RECCHIA: Real quickly I just want to add, you know, that the longer term goal for the reasons that Commissioner Miller just mentioned is really visionary. But we are looking for, and as also was mentioned, we need benchmarks, and we need, you know, we need interim goals that are achievable that require us to work, so we are not waiting until 2049; right?

So we could use help in terms of if those are not strong enough, the interim goals within the next year to three years, those are really critical to get us on the path. But we definitely wanted to establish the vision that was, you know, we are going to change the dynamic of how we deal with energy.

MS. CAMPOLI: I just want to say I don't know how much you paid attention to the transportation side of the house, but the -- so much -- we are so beholden to other forces outside the state both in terms of it
being a regional transportation network and
the fuel side of the equation, and the
technology side especially. And we can't do
it without the technology changing.

And we have some objectives, some
interim objectives, which is 25 percent
renewable for transportation sector by 2030
to give us that place to go to. But that's
incumbent -- dependent on the cars being
available to us, electric cars being
available to us; the grid being renewable.
And then the cars, the technology being
available. And that means being able to buy
them, being able to afford to buy them,
having the fueling infrastructure in place.
So there is some pretty big hurdles, and
transportation is 30 percent of the problem.
So we really have to be realistic in that
regard.

MS. McNEAL: Yeah. I mean I'm all for
long-term goals. I think people tend to
want things too quickly. I mean our whole
economy and everybody's expectations that
everything is just going to turn around
instantly and not giving policies a chance
to work, you know, I'm all for long-term goals. But I also think that it's important to come up with a good marketing strategy, if you will, to talk about while, you know, okay 90 percent, we are at 25, I think you said?

COMM. MILLER: Nearly.

MS. McNEAL: So 30, 60, 90 what are the milestones? And easy things for people to grab on to and say oh, we are heading here. You know, just, you know, just a thought with marketing. And getting people behind it, because it is hard to wrap your head around 40 years, especially if you're in your 40s or 50s.

MS. CAMPOLI: We are big on metrics in VTrans and measuring progress to data. And some of our strategies are centered, maybe too much, on data. But if you could look at, you know, some of those metrics that were set out, and see if they make sense, that would be really helpful, because that's how you show progress, and that's how you tell the story to the public.

But in order to get to those metrics
you've got to hit the data, you've got to have the ability to collect the data.

MS. McNEAL: That's a great segue to my next question. Fred and I have been on the committee together. And one of the things I'm very interested in is the metrics. We had a very aggressive energy plan to reduce our greenhouse gases by X percent in a certain amount of years. And we had a very good plan for that, similar to what you showed up here. And then when it came time to measure it, we were like how do we do it.

COMM. MILLER: Right.

MS. McNEAL: And so I was curious, you know, with all the metrics that you did put up, are those sustainability metrics, how you gather that data, are those tools in place where they can actually -- you're nodding so --

MR. RECCHIA: I am. Go ahead.

COMM. MILLER: Yeah. From the department's -- from the electric side point of view, from the electric side point of view the metrics are largely in place and already being used. I mean we know the
progress that we have made in electricity. We know how to measure it going forward. That's a fully regulated industry, and that's good news for purposes of having metrics and measurements.

In transportation Gina mentioned what they have done there. And one thing we have talked about, and I'll turn it over to Chris probably for this, is coordinating better the metric, the measurement, frankly of the carbon side with the electric and transportation side. Because I think what's happened recently is we have had some good measurement done on greenhouse gas reductions, but it's occurred sort of in a vacuum, not with the other agencies and departments at the same time looking at policies and trying to align where we are going.

MS. McNEAL: And looking at the same units of measure.

COMM. MILLER: That's the total energy standard idea as well.

MR. RECCHIA: Yeah. And I think that that is the weak point of the measures. We
are used to measuring vehicle miles traveled, we are used to measuring the number of gallons of fuel oil we use. Harder will be what's the real carbon. What's the true carbon cost of a given thing, just like true life-cycle cost of any of the fuels are a little bit harder to measure.

And then also Tom pointed out this point too, particularly natural resources and forest resources, measuring biomass sustainability is going to be an interesting exercise. We are going to have to get our hands around how to -- what's going to be the metric for that, and how are we going to measure success or failure on that.

COMM. MILLER: The total energy standard idea that's set forth in the plan would, if implemented, convert all energy usage to a particular unit, for example, BTU. You could do kilowatthours, but BTU is a more obvious one. And then have a standard measure, you know, 23 percent renewable now. So can we shoot for 27 percent X years from now? If so, where will that progress come?
What percentage of that progress will be in transportation versus home heating?

So that's the idea of trying to create a standard with a common unit. So thank you.

MS. McNEAL: That's good news to us. Let's see. Yeah, and then you know, I guess the point I brought up earlier about disposal, asset disposal, and that is -- is that in the plan? How we plan to disposing of our older technology?

COMM. MILLER: The only places it's addressed in the electricity sector, decommissioning plans are required by the Public Service Board for renewable projects; solar, wind. And so we certainly advocate for that to continue.

The other place where it's addressed peripherally is the Department of Health has asked to be more involved in energy going forward and looking at public health impact assessments which would include some of the issues that you raised. It would, you know, how are we going to actually dispose of the environmental hazards, and what are the health effects that could result if we
didn't. Honestly it's not addressed in the way that you're looking for, and it's a good comment for us to hear.

MS. McNEAL: Thank you. Because I would like to be involved in that in some way when it does.

MR. RECCHIA: Cool.

MS. McNEAL: That's part of what I'm developing services like that now for my company.

MR. RECCHIA: Great.

COMM. MILLER: Thank you.

MR. RECCHIA: Maybe on that I'll just add, recently Vermont just added an E-waste program, electronic waste recycling program. There is an example of how we take a complicated new product that we weren't -- 20 years ago none of us expected to be throwing out that we need to figure out a home for.

A couple of other places where this comes to mind is if we do programs like wood stove changeouts, you know, where you pay somebody a rebate or something like that to buy a new wood stove to -- more efficient to
replace their old inefficient one -- what you don't want them doing is taking the old inefficient one and giving it to their neighbor to hook up. Because then you haven't accomplished your goal.

MS. McNEAL: Re-marketing not done well.

MR. RECCHIA: It reminds me a little bit of the Cash for Clunkers. All they really cared about was to drill a hole in the head gasket or something. I'm not sure how they disabled the vehicle. But we need to do a whole holistic recycling of those things and figure out a way to change out older systems to go faster.

MS. McNEAL: Well thank you for the floor. Appreciate it.

COMM. MILLER: Thank you.

MR. RECCHIA: Thanks for your time.

MS. McNEAL: You guys are doing a great job.

COMM. MILLER: Mark, is it Boivin or Boivin?

MR. BOIVIN: Yes. I'm Mark Boivin. My brother and I farm in Addison. My last name is spelled B-O-I-V-I-N. I came here too
late to hear the presentation, so if I'm off track, please accept my apology. And now that I see we are being transcribed, did I miss the swear in?

MR. RECCHIA: No.

COMM. MILLER: You can say whatever you want.

MR. RECCHIA: The beauty of this one is you don't have to tell the truth.

COMM. MILLER: Just your opinion.

MR. BOIVIN: We used to milk cows up until 2008. We started burning our corn back in 2003, because we were noticing that the price of corn was selling at 60 percent of the price of fuel oil per million BTUs. So I go to these discussions, and I hear everything about wood pellets. And I have to comment, the gentleman that -- whose presentation I came in on, his was the first time I heard talking about a radius that you can -- an effective radius that these things can be done in.

We are selling corn for people to heat their houses and businesses with, and there is a radius for that. There is a radius for
bricks, there is a radius for cement. But there seems to be no radius for fuel oil. It's trucked in. You talking about roads; there is a lot of deterioration of our roads for this hauling. And when you go to this alternative fuels, you're going to hear some people talking about all these trucks degrading the roads but ignoring the degradation that's happening with the fuel trucks.

The other point was that I agree with, again with the same gentleman, was that using wood to produce electricity is probably a poor use. Did I understand that correctly?

MR. TAILER: Yes.

MR. BOIVIN: The reason is if you look at the energy information, agency numbers, most of the fuel used in Vermont is for transportation and home heating. You use wood to create electricity, you have a lot of waste heat. And that's really what we need. So if you were to have that, there is some cogeneration that's being done, work done by Pratt & Whitney and GE which is a
technology that might be around, but that's off in the future. Right now I just hope that people look at corn as an alternative to pellet, because that eliminates the having to grind, to cut, haul, grind and pelletize. From an acre of corn we get four tons of a pelletized fuel that is -- that burns clean, it's safe, it doesn't spontaneous combust. If it's put in a corner somewhere and forgotten it rots, it doesn't create a fire. And appliances that burn that at 95 percent efficiency.

Now in my discussions with promoting this technology one of the problems that I encounter is people have the funding problem. They know that they could benefit from a change to new fuel source, but they can't get the bank loan, they can't get the financing. And I think if you're going to go for that, you have to address those issues.

In line with this, is you were talking about metrics. I have a mixed feeling about metrics. I like keeping track of the numbers. I don't like it when they are used
for goals, because then people will take and
tweak the numbers to get the goal, but not
necessarily be truthful about it.

MR. RECCHIA: Could you tell us how to
do that? Because we are not going to meet
the 2012 goals.

MR. BOIVIN: No. You tell -- if I knew
that, I would do it with IRS, but I don't
dare to. You know there is certain things.

But one of the problems you're going to
have when you do this metric is the energy
efficiency metric. How do you measure?
You're saying our goal is this. And when
you save people energy, does that come into
that spreadsheet, into that metric? Does
that come in as part of that? And how you
get the numbers for that? Because I have
had people wanting to buy an appliance and
stoves from me, and furnaces, and we tell
them, you know, your best dollar is to go
get your house insulated. You won't be
happy buying fuel from me if you can't
afford what you're paying now anyways.

COMM. MILLER: Right.

MR. BOIVIN: And so you have that -- I
consider it two parts of the same problem. How do you pay for it, energy efficiency.

Now back to the number parts that I do like. Is none of this -- none of these plans are going to work if A, they are not economically feasible, and B, they don't follow the laws of thermal dynamics which comes back to this promotion for electric cars. They are very efficient at the user end. But if you get fuel that's produced, electricity that's produced, and then you have your transmission losses, your heat losses, and everything else from -- whether it's from a wood-fired plant or coal-fired plant in the midwest, it doesn't make any sense.

The best use of our energy is to produce it regionally in this state, in local areas for, you know, each area be somewhat self dependent. That reduces the burden on the roads, that reduces the cost of the infrastructure, and it's energy efficient. And every time I've looked at all these different ways, I still come back that corn is the most efficient. It is the most
efficient energy collector, one of the most efficient energy -- solar energy collectors in the world. Right in with sugar cane and all those others.

It's a C-4 plant, and it collects twice the biomass per acre as an acre of temperate forest. So you're saying that with the wood products not being sufficient, we really have to look, I think, at corn and the production of corn and the use of corn as a fuel source and use that to provide the heat, save the liquid fuels for transportation.

And unless anybody else has any questions --

MR. TAILER: I read a bunch of articles recently worldwide talking about the tradeoff between using farm land for biofuels or using farm land for food. And it hasn't really become controversial here, but in a lot of other countries it's a hot topic. How would you respond to --

MR. BOIVIN: I don't see a conflict between food and fuel. For one thing we are producing probably 80 percent of the corn
acreage in this state. I don't have all my charts and figures. But I might be off. But we are definitely producing fewer acres of corn than what we did 50 years ago in this state.

200 years ago all of our energy was bio power, which was -- most of the crops that were harvested 200 years ago were used for energy to feed the horses and so on. We go to other parts of the world and they are still using animals, they are still using water buffalo and so on.

So I look at it as a question of efficiency. And the other point is that when you look at food and fuel, we take one to one and-a-half million acres of crop land out of production per year for suburban sprawl. If you can take and use that to produce a fuel right now and keep that land in production and keep it from going to urban sprawl, I don't see how we are taking food out of somebody -- out of the thing.

In fact, if you look at the supply demand curves for corn or other crops like that, and fuel, corn is -- well let's start
with fuel. Petroleum is inelastic supply and elastic demand. When the price goes up, people cut back but the price stays. When demand goes back, price drops, but supply stays pretty fixed over a short term. Crops like corn have the opposite. You have an inelastic demand. People want so much every year for food. More than that makes the price plummet, so therefore you have a very elastic price structure.

When you compare the two together, they will help stabilize the two of them. So when you have a situation where somebody can burn corn and oil, one will go to whichever is cheaper. And it will help balance the two markets against each other. In the long term I think we are all -- everything we buy is going to be priced on the basis of the energy content. And it's the same way as what fuel oil, propane, natural gas is, in generating electricity. The power companies go to whichever is the cheapest source at that time.

And what I'm suggesting is that we set up a system where homeowners and small
businesses can do the same.

MR. STEIN: Andrew Stein, S-T-E-I-N. I'm not sure if you know off the top of your head, but what is the BTU content of corn?

MR. BOIVIN: There is a lot of different numbers on there, and they are all pretty much wrong. Okay. There is two different BTU numbers. It's what they call the high heat value, and the low heat value.

What you see is a lot of times people will compare one fuel with the high heat value with the low heat value of another fuel. The high heat value of corn and wood pellets is somewhere between 8,000 and 8,500 BTUs. There is some difference between the species. Some places they say species is not dependent, it's by the pound. But you look at other sites and they have -- species per pound.

MR. TAILER: BTUs per pound.

MR. BOIVIN: BTUs per pound. It's not always equal, but it's close enough. It's like ball park figures. Corn has got about the same number. Has about 8,350 is the figure that I have been using for the high
heat value. The low heat value takes into account for the amount of water that's produced and the cost of heating the air. So that you're running about 67,680 BTUs for those.

So it depends where you want to measure and when you measure efficiencies, some companies will take the high heat value, some companies take the low heat value. And there is no standards as to how people are supposed to do that. It's the same as the wood pellets.

I found out the other day that you can have 20 percent plastic in wood pellets and still be called premium.

MR. RECCHIA: Yes. That's a problem.

MR. BOIVIN: I dealt with another customer that bought some 100 percent recycled wood fiber pellets from Canada a few years back and had some plastic in it. And what that was was all pressed paper. So that's one of the reasons I like corn is because when it comes off the cob it's the same. It's lightweight, or heavy weight, but the energy content is still the same.
Any other questions?

MR. WARK: Steve Wark is my name. Real quickly have you explored the idea of transfer development rights for growth in your zone? So you could give otherwise density bonuses to projects that might qualify, and then you know, you could create a sub market.

MR. BOIVIN: Why would I want to sell half my farm?

MR. WARK: You wouldn't. What you would do is you could actually sell the development rights to your farm.

MR. BOIVIN: That's half my farm.

MR. WARK: You could sell that to a developer. You could still maintain ownership of the property and use it however you want, but they could pay you money and use those development rights for greater density farther.

MR. BOIVIN: I would rather get in a situation where I'm selling carbon credits, because 40 percent of the corn is in the kernel, and the other 60 percent goes back in the ground. I would rather go into a
situation where I'm selling carbon credits.

MR. WARK: Interesting.

MR. STEIN: What about prairie grasses and --

MR. BOIVIN: Some of the prairie grasses you've got to look at the photosynthesis, look up on E-Bay C-3 and C-4 photosynthesis. Some of the grasses proposed are spring and fall grasses and they don't make maximum use. The ones that are in the C-4, what they call, creates a four-chain hydro carbon, are the ones that are heat loving and love intense sunlight which are the ones that grow in the summer. Unfortunately things like crab grass fall in that category. But it may be prolific, but they don't put out a lot of biomass.

Of those that I've looked I really think miscanthus has more potential than switch grass. The problem is is you have -- you grow it in the summer. You have to dry it, you have to take it off, you have to handle it, which is bulky; you have to pelletize it. And in this climate where we are harvesting a grass late fall or heaven help
you, early spring, is not a fun thing to do.

As far as that goes, that also requires an entire new infrastructure. We have the infrastructure already for corn. Farmers in this state have been growing corn for 200 years.

MR. STEIN: You can bale prairie grasses. Just like you would with hay.

MR. BOIVIN: Right.

MR. STEIN: And there is plenty of infrastructure available for hay.

MR. BOIVIN: Right. Then how do you pelletize it and burn it?

COMM. MILLER: There is though, in fairness there are some companies who are working on it, and from a planning point of view we do suggest in the plan that we keep an open mind on developing grasses. Because it is an area -- and crops generally speaking. Including corn.

MR. BOIVIN: I would like to add --

COMM. MILLER: So it's not just woody biomass.

MR. BOIVIN: I'm not opposed to it.

There is certain land that was not suitable
for corn but would be suitable for that. And I'm definitely in favor of, in any plan, keeping an open door for those technologies as they develop.

COMM. MILLER: It's also a potential help on things like water quality if you have buffer grasses and things like that.

MR. BOIVIN: If you have a floodplain you're better off to go with something like that.

COMM. MILLER: Thank you very much.

MR. RECCHIA: Thank you very much.

COMM. MILLER: Steve Wark. Having just spoken, you have the floor.

MR. WARK: Thanks. Thank you. Steve Wark. I'm the Director of Communications for Vermont Gas, and I'll be really, really brief. First kudos to the state, to the department, for getting the Energy Plan done. It's a very forward looking document, I think, and you've got to do that. People will always question the choices and technology. But you've got to take a stand at some point and make some decisions, and as time evolves, so it's good to see that.
Secondly, really, really pleased to see such an emphasis on renewables. I think moving forward, and it may sound weird coming from a guy that works for a gas company, but seeing renewables is part of our portfolio. It's going to be critical.

The third piece that I would like to add real quickly is efficiency. We have an efficiency program at our company. Efficiency Vermont does a great job. We collaborate very closely with them as well. But as the Commissioner pointed out before, efficiency is perhaps one of the most affordable ways to save money. You know, it's easier to buy efficiency than it is electricity, or a lot of other types of energy that are out there.

So what we would love to see is basically any sort of fuel provider or energy provider participate in that sort of program. That way it essentially brings efficiency programs that are otherwise not electric to areas so that people can benefit from those and save money.

And the final thing that I would just
put a plug in for, I notice there was a thing on regulation up there. I think regulation is key. It can be what makes or breaks a project. And you know, Vermont has a very robust system in terms of ensuring that our landscape is protected and it's a working landscape. But you've got to have people working. And so to get jobs and projects going cutting through regulation, red tape, I think is key. And I think you can do that frankly without having to minimize standards.

So overall I guess the headline would be great job with the energy program, with the Energy Plan. And we wish you luck with it.

COMM. MILLER: Thank you.

MR. TAILER: A couple years ago I saw a program you did, I think with Champlain College, where you had a combined heat and electric generation system on a micro scale.

MR. WARK: Yes.

MR. TAILER: Which was really exciting in terms of a much better use of the natural gas resource. How has that developed, and is there potential to create state
incentives for micro cogeneration from
natural gas?

MR. WARK: So that's a three-watt
generation program I think they call it.
Because it's a co-gen system, and as I
recall it using a Honda combustion engine.
And while it is very unique and interesting,
it's really not cost effective in the short
term. We like it obviously because it
starts to put a stake in the ground for
other types of co-gen.

But you know, really when you look at it
it's like transportation. I drove down here
in a natural-gas powered vehicle, and it's a
cool Honda Civic, and you look at it and it
looks just like a regular car. But the
incremental costs are so high, where the
sweet spot is I think is the scale.

So when you look at transportation we
say it makes more sense for trucks and
fleets that are in a fixed region to do it.
And I think the same thing with these
cog-gen. There is also other technologies
like the bloom box, I don't know if you've
seen that, where it's direct methane to fuel
cell technology. And it's, you know, it's -- it works. Is it as cost effective as it could be? Probably not. It's probably more cost effective than solar panels.

But in the long-term you've got to kind of balance where you're going, and it's still a fossil fuel. So if our goal by 2050 is to be, you know, 90 percent renewables, you may look at it and say solar is probably a better way to go.

MR. TAILER: In relation to potential generation of electricity from natural gas in the State of Vermont, what are the current smallest scale natural gas generation systems that are cost effective?

MR. WARK: It depends on where you place them.

MR. TAILER: I assume you'd place them near the load.

MR. WARK: You would want to place them near load. And ideally what you would want to have, I think, is to capture the lost heat, so again you have a sort of co-gen situation. Probably 50 megawatts is what would be the most cost effective.
COMM. MILLER: Smallest.

MR. WARK: Smallest, yeah. Sorry, that would be, you know, the least that you could get in the door with. The bigger the better. But then you start moving in the direction where you're investing so heavily in gas which, you know, from a company perspective is not a bad idea. But from a state perspective, if we are moving toward renewables, it depends on where you place it and how you partner it. So there are some other partnering technologies.

MR. TAILER: Well if you're doing a --

MR. WARK: There is one with solar where essentially gas becomes a backup to the solar.

COMM. MILLER: What's the possibility with biogas? And putting it actually in the distribution system?

MR. WARK: It has to be kind of industrial grade.

COMM. MILLER: I know Middlebury College has worked on that.

MR. WARK: And we have been, you know, partnering with them and helping to the
extent that we can. So --

MR. TAILER: The biogas has a high moisture content. Also has other impurities, and you can remove them, but it costs money. So the question is if you can use it without removing them, it's a lower quality fuel, but may be more cost effective to use it in other applications without meeting the industry standards that you have.

MR. WARK: Right.

COMM. MILLER: Thanks.

MR. WARK: Thank you. Nice job.

MR. RECCHIA: Steve, one quick question if I can.

MR. WARK: Sure.

MR. RECCHIA: So you mentioned on the efficiency thing, you mentioned the idea of kind of replicating what Efficiency Vermont has done with the other sectors. So one of the challenges we have is where to get funds for those sort of things. And Efficiency Vermont does that by adding a few cents on to the electric bill.

Are you saying you guys are amenable to
doing that on gas?  If we do it on oil and
you know --

MR. WARK: We already do it on gas. We
put in $2 million a year. And just a quick
stat. In the 19 years we have had our
program going, we have about 45,000
customers. We have already served 22,000
homes in our footprint. And right now just
very briefly, we have Franklin and
Chittenden County with a hopeful plan to
expand to Addison County. But we have hit
about half the houses, and you know, we are
not slowing down any time soon.

MR. RECCHIA: That's very helpful.
Thank you.

COMM. MILLER: That's interesting.

MR. TAILER: Could you answer a question
about where natural gas in Vermont comes
from?

MR. WARK: Ours comes from Alberta. And
it's an oil field that's up there. A
traditional sort of --

MR. TAILER: Not fracked?

MR. WARK: I can't say a hundred
percent. The way the hubs are set up these
days there are fracked gas that comes from
many different locations. I can't say it's
certified frack-free gas. It's not like
fair trade coffee, for example. But on the
other hand, ours from contracts, it comes
from Alberta.

MR. TAILER: Thank you.

COMM. MILLER: Let's see, was it Bob who
had passed before? Do you want a chance to
speak or anybody else?

MR. McNARY: Well I guess I'll make just
one small comment to the fellow in the
front. Mr. Recchia?

MR. RECCHIA: Great.

MR. McNARY: Has skittered around it all
night.

MR. RECCHIA: Excellent. It's one of my
best --

MR. McNARY: What it comes down to is
this. In Europe, renewables work quite well
because of three words, feed-in tariffs.
Until the United States gets on that program
I think we have got a real tough row to hoe.
It's going to take feed-in tariffs for this
to be successful on a large scale basis.
There is just no question about it.

MR. RECCHIA: Thank you.

COMM. MILLER: Anybody else wanting to -- before we come back to Tom, is there anybody who hasn't spoken who wants a chance?

MR. GROSS: Okay.

COMM. MILLER: Is it McNary?

MR. McNARY: M-C-N-A-R-Y.

MR. GROSS: Hi. My name is George Gross, and I'm a chairperson of the Shoreham Energy Committee.

COMM. MILLER: Can you spell your name for us? Sorry.

MR. GROSS: Gross. G-R-O-S-S. George. On a personal note, my wife and I designed a net-zero energy home. We built and completed just last year, started work around 2007. So part of what I have to offer to comments tonight are based on that experience, making a zero energy home for the last few years. And discovering a lot about the technologies along the way that are what the respective costs are and whether -- what it actually looks like to
have and operate a house like this.

One of my comments has to do with the transportation aspect. Our household hasn't moved to an electric car. We have a plan to go there on the proviso that in the long-term, probably around 2015, we would be in the market for a car like that, provided it had four-wheel drive. And you know, right now I don't see it as a likely outcome because the market is so immature. That might add -- culturally Vermont really does look at four-wheel drive as sort of stable stakes for a vehicle. And so you're kind of dependent on that.

And I might also say looking around that the typical car, if you were to walk say Route 7, and see how many SUVs and trucks roll by, the odds of moving them to electric are pretty dicey. The cultural perspective is this is the kind of car I need for this climate. And you know, electric vehicles typically work their best because they are very light. The batteries don't have a lot of power per pound and consequence is to get the range that people expect, you need a
small, lightweight vehicle. And that
doesn't play well with the expectations most
people have for vehicles they drive.

So part of your plan is fairly
vulnerable to that. And I don't know that
you have a way to remedy that short of
waiting for the market to mature.

COMM. MILLER: We do recognize that.

There are things, not to be too Polly Anna
about it, but there are things happening in
the electric vehicle industry that give us
some reason to be hopeful. There are
projects for heavier vehicles, heavier-duty
vehicles on electric motors that have
actually been successful. It's a question
of scale and cost. And it's not going to
happen by 2015.

MR. GROSS: Right.

COMM. MILLER: I completely agree with
that.

MR. GROSS: One of the things I did in
design phase of this house was take a survey
of all the technologies, and I tried to keep
fairly current about each of them, with
regards to all of the different facets of
running a household; space heating, electric
generation, and so on. Each of them has
their strengths. For example, the electric
PV array, we just expanded it. We have just
added an air source heat pump which is
capable of heating the house in the winter
or cooling it in the summertime.

The issue with the wintertime, and
you'll see this with any of the renewable
resources that are solar dependent, is there
is frankly less solar in Vermont. And so
any plan that presumes to take solar as the
key component in your mix has to find a way
to counterbalance that. I currently net
meter in. I know in the wintertime, this
coming winter, I'll take about a thousand
kilowatts out that I generated this summer.

Obviously I'm using the grid as a
battery. Until we have electric storage
technology that is capable of running across
seasons, you're going to have find a way to
run the grid to do a counter balance for
that shortfall during those parts of the
year. I don't know if your plan actually
speaks to that, and actually a planning
exercise for it in terms of capacity on the grid or where that would come from. You could think of a number of different ways to do that. But I think you would probably find some of them are going to be fossil fuel based electric generation which would be ironic.

So that's one important piece of feedback for that component. The technology is also very dependent on a variety of exotic elements some of which are imported from places like China that are not necessarily reliable to have in your -- as a dependency in the long-term. If we were to look out over the next two or three decades being -- I think you're going to see increasingly much more scarce set of opportunities for extracting minerals and elements that are essential to these technologies.

As some people have already heard -- probably heard about rare earth, for example, China has over 95 percent of the world's market for that and using wind turbine magnets, lithium for car batteries,
solar array, selenium, cadmium, a whole bunch of other smaller trace elements that are used. So one of the things you may need to develop is contingency planning for the fact that there is going to be on international markets a lot of competition for relatively scarce commodities, and you may not necessarily be the one who comes out ahead.

Economic strength not an assured thing for 20 years from now. We certainly don't want to be in Afghanistan getting our minerals from there. Okay.

COMM. MILLER: Can I ask a question since you're in a net zero home? We had many folks ask for a strong statement in the plan for net zero construction by a relatively early date, 2020 was the most often suggested. And we looked at that, and frankly the plan is not as aggressive as some people -- the draft plan is not as aggressive as some people had asked because there was some concern about the ability to implement, getting to the point made earlier.
MR. GROSS: It's a good question.

COMM. MILLER: So given that you're in a home, I'm just interested in what you think about the ability to move new, especially residential construction, toward net zero within a time frame. 20 years, 10 years. What do you think?

MR. GROSS: The building trade is very -- how do I describe it kindly?

MR. TAILER: Currently billable technology narrowly avoiding prosecution.

MR. GROSS: Very set in their ways when you work something through hard experience, and you work with your hands like that every day, the goal is to get from one job to the next, doing what you do and get paid for it and get to the next job.

With respect to net zero energy homes about 90 percent of your solution occurs in the first 20 hours of the design of the house. And frankly for every house that I've built or one like mine, there are probably a hundred built that had no design whatsoever thought about for energy. It was about lowest cost. And so when I look at
this problem, all the parties who have a
stake in the game are looking at how do I
get my cost per square foot to move into
this house as low as possible.

Right now the cost is probably a running
about 150 to $200 per foot, depending on the
house. Our house is at the high end of the
range. If you count some of the things we
did with thermal energy.

MR. RECCHIA: The irony, if I could add,
is people that can least afford it then are
looking for the low per square foot cost and
as a result then have the operational costs
to bear --

MR. GROSS: Exactly.

MR. RECCHIA: -- that they can't afford.

MR. GROSS: Once they go off to
somewhere else and leave, they sell the
house to someone else, and they make the
profit, and then the next person. So your
actual turnover in your stock is probably 1
or 2 percent houses get built each year
compared to the total 220,000 households in
the state.

So net zero is wonderful if you have a
clean slate and you design from inception like we did. We picked the passive solar design. We super insulated. Air sealed, several hundred hours of wandering around with a spray gun and caulking. Most people just don't do that. They even -- if they knew how, they wouldn't be willing to do it because there is so much extra effort to get there.

The technology is -- I mean there are probably other ways, 20/20 hindsight, I could probably do it better the second time; do it less effort, less cost. But the training curve for all these people who are stuck in their own ways is substantial.

And I might add, most of your problem is the hard nut of getting people to ante up. I don't think 75 hundred dollars could actually get you a true home energy retrofit. Maybe. I mean I would have to look.

COMM. MILLER: 25 percent. It's not a deep retrofit. I agree.

MR. GROSS: Right. It's not a deep retrofit. Is that good enough? I don't
know. You know. I mean the ideal world
everybody would have access to a PACE loan,
and they would get, you know, 20 or $30,000
or whatever it is, it takes to get that deep
retrofit. And then you start seeing
substantial benefits.

Right now energy is not on people's
radar. If I was to go to knock on doors in
my town, I would wager less than one in a
hundred is thinking about doing something to
their house to improve their energy cost, if
that. So that's where the problem is.

COMM. MILLER: Thank you.

MR. RECCHIA: Thanks a lot.

COMM. MILLER: So we have now gone past
9 o'clock. And I do want to make sure
people can leave more or less on time since
we tried to start more or less on time.

And by the way Deb Baslow from BGS,
Buildings and General Services, came in a
little late. She is our State Energy Plan
guru.

MR. RECCHIA: And realtor.

COMM. MILLER: And lately realtor. Post
Irene. Are there other folks who haven't
had a chance to speak and would like to
before we break?

MS. ASERMILY: Maybe it's been addressed
because I had to leave a meeting, but did
you address natural gas? Then I won't cover
it again.

COMM. MILLER: Do you want to give your
name and just a general comment? That's
fine if you do.

MS. ASERMILY: Laura Asermily.
A-S-E-R-M-I-L-Y. And I just want to express
concern about the regulation of safe natural
gas extraction. And if you're looking at a
6 billion dollar investment in something
that will peak also as a resource
eventually, is that really where we want to
be spending our money?

COMM. MILLER: I appreciate it. Did you
see -- were you here for the presentation
itself? Because I definitely recognize
personally and the plan recognizes the
trade-offs. And you know, fossil fuels are
fossil fuels, but they are not all equal in
all respects. And one of the ideas behind
giving more Vermonters the choice of natural
gas is in order to bring the infrastructure further and have something besides home heating oils and other fossil based fuels to use while we develop and grow renewable sources of energy.

So I definitely understand the tradeoff and appreciate the comment as well as the comment to make sure that we keep the eye on the environmental ball. I know ANR feels the same.

MS. ASERMILY: I'm concerned more about what it eventually hooks in with the south of us and what happens there.

COMM. MILLER: Right.

MR. RECCHIA: Right.

COMM. MILLER: Thank you. Others who are here who haven't had a chance to speak and would like to? Yeah.

MR. LEHMAN: Hi. My name is Kevin Lehman. I'm an energy planner for the Addison County Regional Planning Commission. L-E-H-M-A-N. Kevin.

I just had a question about in the plan how are you hoping to address the issue of -- it alluded to the gentleman from Shoreham
as far as getting the word out to folks around the state and raising the awareness around energy, not just awareness, but motivating folks to take action, and what sorts of resources will be available from the state to work on that initiative. So that's one piece.

The second piece is I'm hopeful about the PACE program. So I think financing is a hurdle for a lot of people. But the recent study that was commissioned by the High Meadows fund, I assume you're familiar with that? That talked a lot about lack of demand. So how are we going to deal with demand, especially around efficiency.

COMM. MILLER: Both of those questions have to do with outreach education essentially. It was in the High Meadows report recognized that funding is only part of the issue. Many people aren't taking advantage of efficiency programs because they don't know about them or don't understand how to take advantage of them because they are more complicated, and it's not just -- I mean, you know, there are very
smart people in Vermont who just don't have the time, the extra time that it takes to then look into the efficiency programs that they might have for their homes because they are complicated. I mean, you know, I fall victim to that. I'm sure others of us in this room have as well.

So figuring out the outreach and educating is important. And we recognize that. In terms of how to integrate it with the RPCs and the town energy committees, I am open and will remain open to all ideas. We at the cabinet level in state government have talked about rolling out this energy plan as it becomes finalized this fall and bringing it to Vermon ters.

I think the idea earlier of the video is a great one. Having the Governor do PSAs is another idea, but that's not going to answer the question. It has to be also addressed in our schools. We have to create an easier way for schools to bring energy programs to the kids, through VEEP, for example, which already does some of that work. The climate cabinet and the bully pulpit that it can use
across the agencies and departments is another part of the answer. But we recognize an outreach in education has to be a part of this or else we are not going to get the traction that we want. And I think Gina has a comment.

MS. CAMPOLI: Like so much of this, there is no silver bullet with education. There is the whole kind of kid in public school aspect to it, and then there is something as simple as getting people to understand there is a bus that runs between here and Burlington and you should try it sometime. So it's the full range of getting people better informed as to what their choices are to save energy particularly, and also renewable fronts.

COMM. MILLER: One thing the plan discusses is better use of the Renewable Energy Atlas, which hopefully those in the room you're familiar with them because many of you sound as if you're deep into energy issues, but if you're not, check it out. I think that bringing that to a more accessible place for Vermonters if you've
looked at that recently, it has a lot of data. But it could have even more frankly. And it could be more widely used, and I think that that's something that we should promote. And we have talked with the Vermont Sustainable Jobs Fund about that and ways to accomplish that. So --

MR. GROSS: Just wanted to indicate I think with regards to inciting people to actually show up and get involved in energy efficiency, the only way you're going to do that is if you award them through the property taxes. Because every year they will be looking at a property tax rate that was higher if they didn't get their house more efficient. That's how to crack that nut. That might actually get people's attention. Education has got a motive they get a reward for.

MR. RECCHIA: There are two aspects of that I think we are paying attention to. If it costs more to do this, the transfer tax, that's a percent -- it's based on construction costs. We have to subtract out, you know, the energy components of
that, the energy efficiency investments
somehow, so that you're not getting
penalized. Somebody who builds, you know,
at the low end of the numbers that you were
talking about because they are trying to get the
low square footage and not be rewarded at the lower tax or the person who invests
in, you know, same square footage house but one that has good insulation, good design, and that cost more. That cost should be credited somehow. We have got to figure out how to do that.

COMM. MILLER: I know there are probably some of you here who want to get home. But yeah.

MR. BOIVIN: I just want to address the use of the property tax. First off, it's complicated enough. And to layer that in on top of your education is going to be a lot of confusion and a lot of stuff.

The other thing is that's going to be a cost shift from those people that can afford it to those that can't. You're going to be punishing those that already can't pay. Those people are probably capped by their
income level. So that means the state is going to be paying that tax on the back, which means other property owners around the state are going to be paying that. That's going to be a transfer.

So you're making a very complicated thing that's going to shift the burden on to those that are least able to pay it. I would very strongly advise against use of a property tax for that purpose.

COMM. MILLER: Thank you all very much. If there is any other additional comments, Tom or anybody else, I can stay afterwards, but I very much appreciate you all coming and spending this much time with us and giving us your comments. Thank you.

(Whereupon, the proceeding was adjourned at 9:13 p.m.)
CERTIFICATE

I, Kim U. Sears, do hereby certify that I recorded by stenographic means the public hearing re: Draft Vermont Energy Plan, at the Middlebury High School, 73 Charles Avenue, Middlebury, Vermont, on September 27, 2011, beginning at 7 p.m.

I further certify that the foregoing testimony was taken by me stenographically and thereafter reduced to typewriting and the foregoing 121 pages are a transcript of the stenograph notes taken by me of the evidence and the proceedings to the best of my ability.

I further certify that I am not related to any of the parties thereto or their counsel, and I am in no way interested in the outcome of said cause.

Dated at Williston, Vermont, this 2d day of October, 2011.

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Kim U. Sears, RPR