Sustainable Transportation on Campus and in the Community

Keynote Address: "University of California Builds Green and Goes Solar"

Matthew St. Clair, University of California Office of the President

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So, I'm also not going to be talking about transportation. But I think you've had that topic covered relatively well so far and you just heard about why healthy, happy communities and the buildings that make them up are important. So I think my role today will be to talk about how we turn this into action. So I'm going to be talking about policy and action and what role students, for one, can play in that.

So I'm going to tell you the story of how the University of California system and it's notoriously slow moving, out of touch Board of Regents actually passed within one year, a student campaign which I helped lead: perhaps the most comprehensive, ambitious clean energy, green building policy mandate of any university in the country. I'll mention what those policy targets are and then talk to you a little bit about- this was two years ago when the policy was passed, so how's implementation going? Turning policy into practice, into action. And then share some of the lessons that I think we've learned.

University of California system as Mike mentioned, ten campuses plus five medical centers plus three national laboratories, plus several hundred thousand acres of agriculture and natural reserve systems, about 200,000 students, a lot of building space and we use a lot of energy. We are growing as a system; this is one reason to address the energy and other environmental impacts of that growth. They're building a lot of new buildings and about- you see the breakup of this- a lot of laboratory buildings, acute care, housing, and in the "other," I think we didn't want to mention it, but parking structures are a big part of that.

So, I'm going to wear two hats here. As Mike mentioned, I was a graduate student at UC Berkeley on the student campaign side of the policy and now I am the administration so when I'm the administrator, I'm talking about the policy development, right? When I'm the student, I'm talking about campaign history. This is the story of how it got passed. It started in the Fall of 2002 with a grassroots student campaign. Got every student government on every UC campus to pass a resolution supporting the student demands and solicited the student regents to take up our demands with the board and the regents passed this resolution that said, "Okay, we'll do a feasibility study, and propose, maybe, if it makes sense, a policy." So, in the Spring semester of 2003, the president formed a steering committee in a working group that was made up of the University of California administrators and expert community around buildings and energy use. So this included the campus vice-chancellors for administration, campus architects, and a couple professors and researchers at the Berkeley National Laboratory.

The Steering Committee met on its own, met once with students where we presented the results of community forums that we had organized on each of our campuses to solicit campus community input into the process. And this is one of those- the first lessons that I learned. I helped organize the forum at Berkeley and we had people there that were working on renewable energy, working on green buildings, in charge of buildings on the campus, in charge of maintaining the buildings, and, "Oh, nice to meet you, I've seen your name somewhere before." One of the things that

sustainability does in a campus or in a community is bring together everybody. Especially on a campus community, we're broken up into our silos on the administrative side and into the disciplines on the academic side. This is one thing that can bring together the entire campus community, and it's amazing to watch the benefits of actually getting people together in the same room on a regular basis- talking, coordinating the good things they are doing.

Feasibility studies were drafted, the policy original draft was kind of weak- students continued to push- make our demands heard. One professor who's my adviser, who's on the steering committee, was threatening to go to the press to say that it was weak and didn't mean anything unless we had some meaningful policy. But what happened over the course of this year, really over the course of the three months- three or four months that the steering committee and working group were coming up with the feasibility study was that, fortunately they didn't farm this out to an outside consultant because I think in this case institutional learning was key. So it was our own campus architects, our own vice-chancellors who were getting these presentations, having to do the research and then their directors were doing the research as part of the working group. And they learned that what sounds scary because it's new- anything that's new you should be risk adverse until you get a comfort level- this is not going to cause problems. But what sounded, "Oh, this is new, this is pie in the sky, this might be expensive." No. They realized that this is doable now, we have the technologies, and it's cost effective.

So, in the end they came up with a pretty strong policy- very strong policy. And the Regents unanimously approved the policy. But one- I like to share this quote that really represents what this institutional learning that occurred, and that is, a lot of the things that we were saying as students, and the administrators were saying was impossible in January 2003, we heard the senior vice president for Business and Finance present to the Regents their progress making the same claims that three months ago they had told us were impossible. And right about that same time, I was negotiating with the Office of the President and President's staff and talking about how to get to campus budget officers and other folks engaged and in response to something that I wrote to him. I woke up on a Monday morning, turned on my computer and I got an e-mail back from him in which he said, "What you young people have done to engage us oldies in these issues gives me hope that the future is in good hands."

So what are the lessons learned? Students are the drivers. Students have the luxury of saying what we really want, what really should be, and they're the customers, they're the clients of the university. The students are the reason why we as administrators are here. Why the faculty are here.

Institutional learning has to be top down. This is stating the obvious, but we went straight to the Board of Regents, got them to do a policy mandate, but if that was just coming down from the campuses and the campuses didn't feel that their constituents wanted this, it wouldn't work. So the students organized a really good grassroots campaign, met regularly, developed relationships with our campus administrators, let them know why we care about this, why this is important, why it can be done. The other lesson is that people want to do the good thing, do the right thing; they want to feel good about their jobs. What we're doing, suddenly, was allowing the people on the campuses who are building the buildings, operating the buildings, buying the energy, to do what they felt was making the world a better place, and we gave them that opportunity. So if

you give them the opportunity to feel good about their day-to-day work, then, they're happy to do the right thing.

So, what is this policy that we ended up with? It's in two parts, green building and clean energy, and there are three main components to the green building policy.

One is energy and in California especially, that is very important, it's the high visibility issue in recent years. So we mandated that all new buildings must beat the already very strict state energy code by at least 20 percent. We can do that, we will do that.

Second, all these new buildings that are constructed will meet the equivalent of the LEED certified level of the U.S. Green Building Council Green Building Standard for Leadership in Energy and Environmental Design. And all buildings will have a goal of silver and the campuses can opt to but are not mandated to, at least for the time being, to certify with the third party process.

And then we had- as you saw, 40 percent of the buildings we're building are laboratory buildings. So we had some special guidelines for those types of buildings.

On the clean energy standard, overarching goal- while we're building 7 billion dollars worth of new buildings, adding 1 to 2 million dollars of gross square feet per year, we will have no net increase of fossil fuel consumption. That's the goal. How to get there? Three parts:

One, to deal with energy we are consuming- reduce that to become more efficient, but also, in the electricity we still need to procure, make that more of mix, non-fossil fuel. So, we have a goal of 10 megawatts of renewable energy generation over the next 10 years.

We have a goal, also on the renewable energy side, to purchase 10 percent of renewable energy in the first year of the policy, going up to 20 percent in 2017 to mirror the state's portfolio standard.

And for energy efficiency, that we should reduce by 10 percent over the next decade the energy we're consuming.

So, I'm going to talk about each of those policy components, what are the challenges that we're facing and what are some of the steps we're taking to overcome those challenges, what are some of the initial successes. But- why don't you all take a wild guess, what do you think- I categorize it the three main challenges, what do you think would be one of the first big barriers to implementing this policy? Money? Yes, exactly. But there are two other things that are very important challenges that we have to overcome. Anybody want to take a guess of what the other two might be? Actually, it's time. I know you all, at the University of Idaho are experiencing similar budget conditions as we are in California. We have state budget crisis, higher education funding down, down, down, cuts year after year 10 percent, another 10 percent, another 10 percent, understaffed, overworked, so it's time to do something new. And knowledge and training. So, my approach to implementing the policy has been to try to address those three major challenges. I'll talk about how we're doing in a minute.

Implementing certification status as a green building policy, having the campuses who initially was like, "Oh this is an unfunded mandate from that federal government in Oakland. This is just going to- we already- as any of you involved in building industry now know, bidding environments, construction materials, prices have skyrocketed. There are too many pressures on us to do something new." Well, we want to let them know that

they're already doing a lot and that, to take the next steps are not that hard. So each campus developed a baseline of using the LEED system as a framework of how we're doing right now, and what are some not so painful steps that can be taken to improve. And what we found was that process of developing these campus baselines removed most of the initial opposition to the green building policy. And what they found also is that making some small changes and looking at what they're doing, they can get almost to a LEED certified level already, and thus are thinking they've got to go higher now.

Energy efficiency is always mandatory, and three campuses on their own have made their own commitment, have set their own goal to reach LEED silver and go through the certification process for every building. However, we built buildings one way for a long time and to change that requires cultural change and procedural changes and this is something that takes time, so this is what we're working towards.

Clean energy standard, what's the status? Go through the four different areas.

For the new construction goal, our approach was to utilize a utility incentive program called Saving By Design- mandating that every new construction project go through this process where they get free energy modeling, design assistance, and if they take the energy efficiency measures, and reach our 20 percent beyond state code goal, they'll get up to $150,000 in cash rebate for the building itself and $50,000 in incentives for the design team. One challenge here is working with utilities, but that's a story for another time.

Energy efficiency in existing buildings for this 10 percent goal. The challenge is lack of funds, and while the state has required us to build 7 billion dollars worth of new buildings and take in a lot more students as population growth kicks in, they have provided zero dollars to maintain and operate those buildings. So our utility budgets, especially if we're building 40 percent labs, high-consuming, complex space. For example, UC Berkeley has an 18 million dollar budget for utilities and last year spent 26 million. Eight million dollars in budget deficit. So, this has been a challenge. Obviously, that's a good motivation for becoming more energy efficient, but the problem is that you don't have any funds that you can invest and then get those returns.

So what have we done? We're going through each campus developing a list of projects, a plan for doing that. We went out and got a big grant from the state Public Utilities Commission. We got another grant from the California Energy Commission at the state for advanced energy technologies, and we got another grant to look at housing and student energy conservation, also from the Public Utilities Commission.

So this one big grant, we got 15 million dollars over 2 years for the UC and Cal State system. When you break that down into our 33 campuses, it's not that much money. But there's money for retrofit projects, for what we're calling monitoring based commissioning projects and for training and education. Over the last 12 months, we've offered 70 training days on energy efficiency and green building topics to address that knowledge and training barriers or challenges.

Green campus program: this pilot project's now extended to four UC and five Cal State campuses. They do things like have competitions between the dorms to see who can save the most energy, get that student competitive drive going. They've exchanged incandescent to CFL light bulbs. UC Berkeley, I think, they exchanged 2,000 incandescents for CFLs after moving into the dorms last year. Humboldt State organized a design competition for what would the best, all decked out, dorm room look like, and

they called it "Green Eye for the Conventional Guy." The picture here is (referring to slide,) using incentives, right? The picture here is students at UC Berkeley from the winning residence hall lining up for their free ice cream that they got- a big party to celebrate their win.

On-site renewable generation. Challenges here, we went out and got bids of solar PV on our campus, we went out with an RFP, got no bids. We're going to try again this year. No one could match or lower the rate that we were getting from our electricity provider. However, UC Berkeley students, themselves, put up on their Student Union Building a nearly 60-kilowatt system. Graduate students at the business school did a complete solar assessment, financial analysis, identifying other buildings on that campus. We're about to go out for a bid again and early indications are that we're going to get a number of bids for solar PV projects for this year, that economics have improved.

Renewable energy from the grid: challenges here were regulatory uncertainty in the state of California. What's going to be- whether you have to buy from utilities or you can go out to third parties- which is what we have been doing. And the need to educate our supplier. We asked them to talk about renewable energy to our annual conference of energy managers and they went up and said, "This is what solar energy is. This is a wind turbine. These things are really expensive." So, we had to work with them. They had never procured renewable energy before. It's a different type of generator, a different type of contract, different type of relationships in the market. But we didn't let go. We pushed them for a year and a half, and the result was, as of July 1 of this year, 15 percent of our renewable energy, 15 percent of our electricity we can get from this contract is renewable- most of that from wind. And Cal State's system is also on the same contract. We dragged them along. So our combine purchase is 6 months, compared to a 12-month purchase for any other institution in the country- the 6th largest renewable energy purchase of any- voluntary purchase- of any institution in the country and the 3rd largest university, if we extend to 12 months, we'll be the largest renewable procurer in the country.

Lessons learned: All these grants- I don't think we would have gotten them if we hadn't sent out this clear, top down policy mandate saying "We are going to do these things." So leadership attracts resources. Other resources that we've gotten on the purchasing side, because of this policy, EPA provided one-third of a staff person's time to work with our purchasing director in the purchasing process to do more environmentally friendly purchasing. We got a grant from a waste management authority to develop a lead for existing building operation maintenance practices. We've gotten all those energy efficiency grants. When you put yourself out there, when you're tying to do something good, there are a lot of funding opportunities for these environmental goals that are out there.

Another lesson obviously is that policy is only the start. Implementation is the real dirty work. You have to sustain that attention to it.

The third item, the wanting to do the right thing, feeling good about your job- one thing that I've experienced going to these campuses is that suddenly now there is this university-wide attention on reducing our environmental impact that a number of staff and administrators who have this value, part of who they are, that they haven't been able to express in their daily work, suddenly have come out in the workplace as environmentalists. And this is suddenly legitimized, even encouraged, that they look at

ways of reducing environmental impact of the work that they're doing. And the other side of that is empowering people to feel good about the job they're doing. People that are in the educational sector, they already feel good about the mission of educating students, but if they can also feel good that they're helping make the world a better place by doing that in a more socially and environmentally sustainable manner, they'll feel good about it.

Another lesson is that, you need a mandate if you want to make sure things happen. Voluntary measures are good for going beyond and helping the leaders push forward, but you have to have some basic levels, so it's good we have a mandate. The things we have a mandate on are going good, the things we don't have a mandate on- too many other pressures- not happening.

And then the last major lesson we've learned here is that students are essentially the conscience of the university and of society in general. Historically speaking, student movements- when public policy lags behind public values, student movements have brought that to the fore and pushed society forward. And that's definitely the case with this environmentally sustainable- sustainability movement on college and university campuses around the country. The organization Green Peace had supported our student campaign after doing a similar thing with a community college district in L.A. and then wanted to take it to 50 other colleges around the country to have a clean energy, green building campaign. In a year, they had 100. A number of these organizations that are working with the students have just blossomed everywhere, and it's really exciting to see this movement going forward.

While I was a student, I was also a researcher at the Lawrence Berkeley National Laboratory, and in a renewable energy trade magazine, I came upon this quote that I used repeatedly in my public speaking engagements as a student in this campaign and that was a quote from Vice President for Operations at Dickinson College in Pennsylvania, one of over 30 colleges and universities in the state of Pennsylvania that is procuring renewable energy now, after students forced them to do this. This is what he was telling a renewable energy trade newsletter: "Unfortunately, in many areas, it's always the bottom line. It's the dollar that drives our decisions. Often times, our students are our conscience. They're part of our conscience and we know that they're right. They play a very important role in keeping us focused on the bigger picture. I think we need to listen more and more to what they have to say." So, I wanted to throw that shout out to all the students here in the room today that you are the future, but you can make that change now, and I wanted to share our story with you to show what's possible and hopefully our story inspires those of you on other campuses and other communities to do likewise and to take what we've done and push it one bar higher so that we can point to you and keep that race up to try to make the world a better place and more environmentally sustainable. So, thank you.