



ASPO-USA Denver Conference Report (Friday)

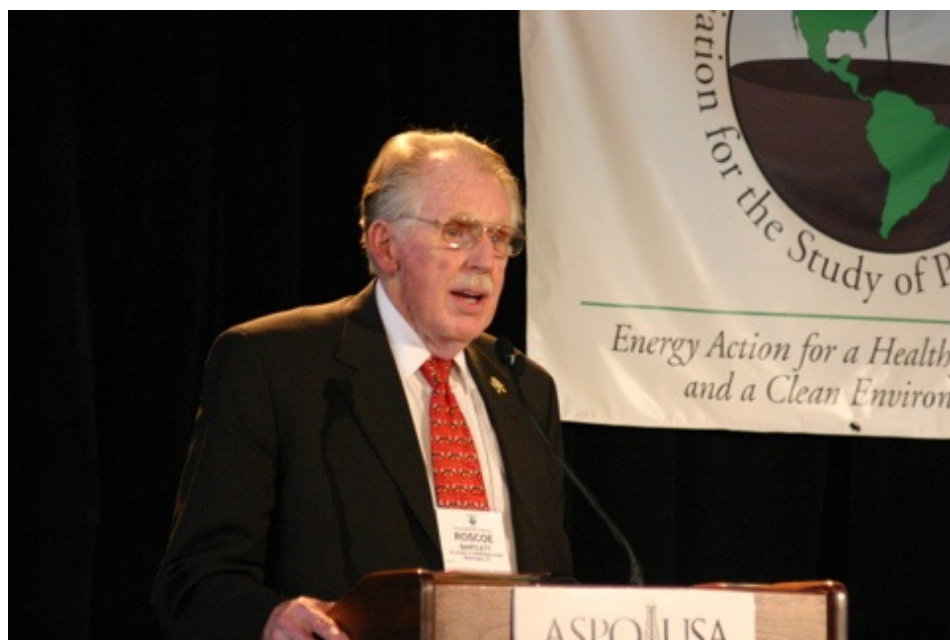
Posted by [Stuart Staniford](#) on November 12, 2005 - 6:41am

Topic: [Miscellaneous](#)

Tags: [aspo-usa](#), [gas prices](#), [hubbert peak](#), [oil prices](#), [peak oil](#) [[list all tags](#)]

Here's my report on the second day of the ASPO-USA conference, which was absolutely superb - even better than the first day.

Note that you can also get [the slides from ASPO-USA's website](#). Also, see [my report of the first day](#).



Roscoe Bartlett dishing it hot and strong.

John Hickenlooper



John Hickenlooper stamping mayoral approval on the conference.

The day kicked off with an address from the Mayor of Denver, John Hickenlooper, who has joined that brave but small band of honest and courageous politicians willing to go anywhere near the issue of peak oil. Indeed his office is a co-organizer of the conference. Hickenlooper began his professional life as an exploration geologist with Buckhorn Petroleum in the Rockies. After five years, he was laid off in the industry downturn in the 1980s, and he ended up starting a brewpub in Denver. One thing led to another and now he's mayor.

He doesn't think the sky is falling due to Peak Oil, but he believes it's something that we need to be aware of and be thinking about. "Over the next ten or twenty years it's going to play a powerful role". But he believes in relatively painless adaptation - there will be a plateau and then gradual decline, and there is "abundant time" to make the changes that need to be made. Precisely because oil has been so cheap, there are lots of low hanging fruit in conservation to find.

Under his leadership, Denver is studying city oil use and what would happen at varying levels of oil price - how would the city adapt. A big focus on integrated transport and land-use planning. The Denver area has a very large transit system just approved by voters. The FasTracks system will involve 57 new stations and 50 of them are close to brownfield sites that can be redeveloped with high density zonings to allow 5-8 story buildings that have mixed use residential and commercial buildings.

Denver has reduced the vehicle fleet 7% - and the city uses hybrids and biodiesel. Denver International Airport uses 100% alternative fuels. The mayor is trying to promote telecommuting to area businesses - even 10-20% of the week in telecommuting would make a big difference to congestion and fuel usage. He is trying to look at whether real-estate agents could be persuaded to launch a TV campaign to promote people moving closer to work (on the theory that the real estate agents would have a lot to gain in getting everyone to shuffle around and be closer to work).

No doubt the mayor is putting his best foot forward in his presentation, but all in all the level of consciousness and creativity that is starting to go into thinking about this issue in Denver is extremely impressive.

Tom Petrie



Tom Petrie recaps Thursday's talks

Tom Petrie (well known energy investment banker and oil analyst) came on to give a summary of yesterday, which I won't repeat verbatim. Some highlights of interest: he repeated the estimate by the [CEO of Schlumberger](#) of an average annual 8% decline in fields in production. This is a spectacularly large number, much bigger than anyone has used in a major peak oil projection to my knowledge and is very alarming if true. Petrie asserts that peak oil is not business as usual - it is the most transformative event in our way of life since the great depression. He gave a lot of credence (as did I) to Henry Groppe's projections (which show us at peak pretty much now) and the importance of the heat/power usage of oil in developing countries which can be substituted with other fuels. He gave high praise to Matt Simmons:

The heart of his arguments are well worth contemplating. It's properly caveated. It's possible to come to different conclusions, but I admire his intellectual courage. Anyone who wants to know where we truly are needs to read his book.

Petrie emphasizes that oil sands are there, but difficult to develop. "We might not even get [to 5mbpd] because of the environmental issues".

A questioner asked him about can we really get rid of foreign oil? Petrie replied that we don't really need to get all the way there, just most of the way there to reduce foreign leverage on us to reasonable levels. He believes we could get substantially there in a decade or a decade and a half. (But I think he was mistakenly assuming that much of Henry Groppe's heating/power oil usage was domestic, whereas actually there isn't much of that left in the US after the late seventies).

Another questioner asked whether exploration made any financial sense at this point (Wood McKenzie has argued that much recent exploration is costing more than the net present value of the oil found.) However, Petrie believes that if the price stays at \$40-\$60 it definitely justifies further exploration.

Roger Bezdek



Roger Bezdek proving that a PhD in economics is no impediment to thinking clearly and well about energy issues.

The organizers allocated a whole hour to Roger Bezdek, who is a coauthor of the [Hirsch Report](#). Dr Bezdek is president of [Management Information Services, Inc](#) and has a PhD in Economics. Bezdek spent his time basically summarizing the findings of that report.

He briefly discussed the long history of incorrect predictions of oil runinng out or peaking, but said, "Wrong is not wrong forever". Some critics have accused peak-oilers of crying wolf, but "The message of that parable is that people were eventually eaten by the wolf."

He also noted that the optimists on peak oil were the same people and institutions optimistically wrong on US natural gas production, which is now pretty clearly in serious trouble. However, the Hirsch report is not focussed on when peak oil will be, but rather on how it might, or might not, be mitigated.

He then went through the Hirsch report mitigation options. All mitigations were basically taken as optimistic limiting cases of massive crash programs. The programs they included were vehicle fuel efficiency, gas-to-liquids, coal-to-liquids, and tar-sands.

They estimate that vehicle lifetimes are: autos, 17 yrs; light trucks, 16 yrs; heavy trucks, 28 yrs; and aircraft, 22 years, and they assumed that vehicle fuel efficiency could be increased via CAFE 30% after 3 years, then 50% after 3 more years. (This may be a little pessimistic in my view, as we are already seeing major model-switching by consumers away from SUVs and into small cars).

They assumed current GTL projections would be scaled up by a factor of two, oil sands/heavy oil (Canada/Venezuela) production estimates of 2.5 times a base of 3mbpd projection in 2030, and CTL based on five new 100kbpd plants per year worldwide.

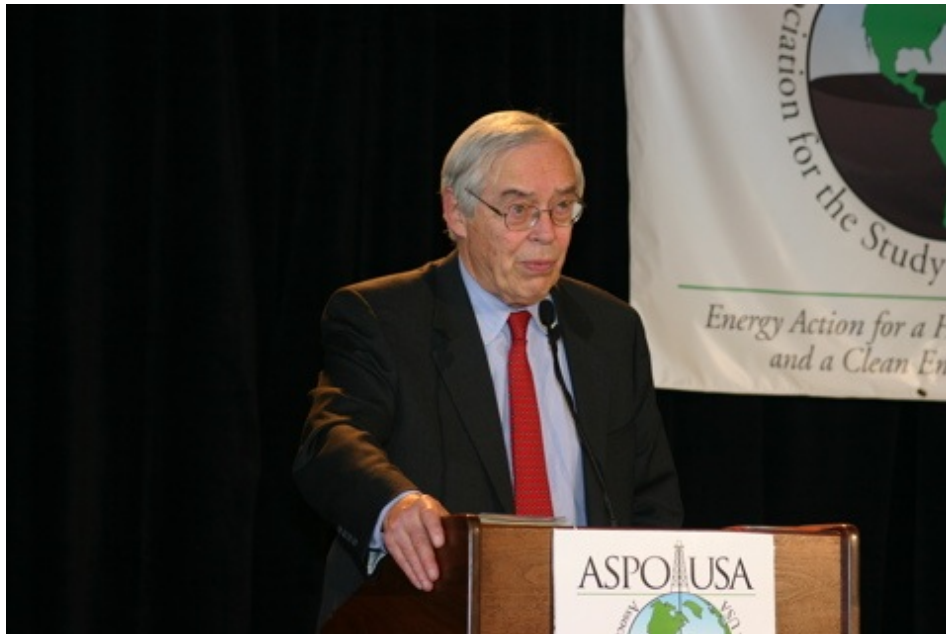
This gives them 20mbpd total after 10 years from all the wedges. They then assume world production post-peak goes like the US with oil decline at 2% and extrapolated world demand at 2%. Then their Scenario 1 (most likely), is that nothing is done until peak hits - this leads to huge

shortages of liquid fuels. Scenario 2 (start 10 years before peak), leaves some, but a much smaller, problem. Only if mitigations are started 20 years early is the problem avoided altogether.

He thinks China has already started mitigations - they have multiple CTL plants at the MOU stage, much stronger vehicle efficiency regulations than the US (but people don't follow the rules).

A questioner asked him about renewables and plugin-hybrids. He generally encourages renewables but hasn't carefully studied the options. He thinks plugin hybrids are way oversold due to battery weight and replacement cost which totally kills the gasoline saving.

Charles T. Maxwell



Charles Maxwell provides us with the wisdom of Athens.

Charles Maxwell is a vastly experienced energy analyst (dubbed #1 many times by Institutional Investor magazine beginning in 1972), and gave a really interesting talk.

He began with some general comments that while capitalism has much to recommend it, huge sharp movements in price cause problems. In particular, he's concerned about their tendency to further promote the excessive debts of the US - both consumer and government. He's worried about the impact on the over-extended banking sector of a real energy crisis.

He thinks high prices are important because there's not much else causing people to make the energy transition we need to make. There's no leadership from government, very little attention from academia, and not much coverage from the media. "Sure there's an article from time-to-time but their heart's not in it - they think we're a bunch of kooks". However, he believes high prices will continue (sharply disagrees with Lee Raymond's view that prices will go back to \$22 - we will never see \$22 again).

Energy conservation is going to be a big wide area of investment that will be critical. However, for people to make the necessary investments, there has to be a continuation of high energy prices. His predictions for average prices (and he stresses that these numbers will be wrong - he just doesn't know which way):

Year	WTI price
2003	\$31
2004	\$41
2005	\$57
2006	\$54
2007	\$56
2008	\$62
2009	\$68
2010	\$75

Lee Raymond's \$22 never shows up! He believes the non-OPEC peak is in 2010 (his numbers don't agree with Groppe's, but he thinks he has to follow his own). He believes that in 2006-2008 supply and demand will be growing roughly in balance and prices flattish, with new projects coming on stream.

After 2010, we will be in the situation of Oliver Twist wanting **more** from OPEC. Prices will go up further after 2010 due to their pricing power.

He emphasized the risk of shocks along the way - Venezuela, Nigeria (tribes not getting a fair deal from government), Russian's want to do it their way - Russian supply will increase, but slower than we would like because they aren't going to invite Western companies in to do production. Iraq will not be stable at all, Iran has the problem with the nuclear issue.

His worst nightmare is a Chavez assassination - this would cause the Chavista's to hold onto power and coup attempts from the upper middle class leading to civil war, and oil exports closed down within days. 14% of our supply goes offline within 10-11 days. The market would bid oil up to \$100/barrel within two days of the assassination. He contrasted the 45 days oil on water with Saudia Arabia versus 5 days in Venezuela, giving us far less time to react.

His view on natural gas is that with the advent of LNG in a pretty big way around mid 2008, he is looking for prices of \$6-7 by 2009. That will have an impact on domestic drilling and the oil service industry.

He loved the alternative energy presentations and thinks renewables will probably do a bit better than the cynics think. However, he basically endorses the Hirsch report - he gets the same kind of shortages in his analysis. We have choices along a spectrum of planned conservation versus planned going-without. We will need to look at combining errands, carpooling. This may have benefits - he highlighted the sense of community in Community Solution's Cuban movie.

He ended up by highlighting a parallel between Athens and war with Sparta and the current US situation. The escalating costs and difficulties of the war led to a political impasse - partisanship in the legislature (sound familiar?). Democracy began to fail. Democracy in Athens ended up being eclipsed by a tyrant in order to get decisions in time out of the system. He fears that outcome in the US.

Jason Mark



Jason Mark, Vehicles Program Director for the Union of Concerned Scientist's Clean Vehicles Program.

Jason summarized the impacts of transportation: oil dependence, air pollution, and climate change. He particularly emphasized the climate change issue, which I was glad to see, as I thought it was otherwise under-represented at the conference. He presented a view that a goal should be to try to stay below the 450ppm-550ppm level (a safe level not too much economic impact). Business as usual goes way over this by mid-century. I don't personally agree with this viewpoint - the evidence to me looks pretty compelling that we've already got significant economic impacts with drought frequency and hurricane intensity both being doubled worldwide over the last thirty years. At this point, we're deciding whether we'd like to live in just a rather different climate from that we built our civilization in, or a totally unrecognizable one.

His main focus was vehicle fuel efficiency. He outlined how currently available technologies could improve Explorer fuel mileage from 20mpg to 28mpg. This would cost about \$800 more in the showroom, but that will pay for itself within 1-2 years at the gas pump. Hybrids move beyond this. However, there's concern over muscle-hybrids such as the Accord - the hybrid technology is mainly going to provide more power, rather than more fuel efficiency.

He discussed alternative fuel vehicles. Ethanol and lignin/cellulose; they have great hope for biofuels. Plug-in hybrids - challenge is battery cost. Fuel cells - many somewhat sceptical but UCS supports. He gave a very interesting graph on oil demand - with the contributions of conventional vehicles, hybrids, alternative fuel vehicles he thinks we could get US transportation oil usage down by about 25% by 2030. This assumes constant mileage travelled growth.

He thinks politically that the debate on vehicles is shifting - with oil hawks concerned about the national security implications of oil dependence, the agricultural industry looking for biofuel profits, and the faith community asking what would Jesus drive. The policy ball could now move forward.

The audience chimed in with answers to what would Jesus would drive: bicycle, skateboard, or sandals.



Kelli Kammerer on clean cars.

Kelly Kammerer is an MBA from Utah with 13 years in mining industry experience who has now been in alternative vehicles since 1998. She represented Honda who should get considerable kudos for being the only car maker with the guts to show up to this conference, as well as having the highest miles/gallon fleet, and being the first manufacturer to market a hybrid car in the US.

Kelly covered the current hybrids in production: the Accord (29mpg/37mpg), the new Civic (2006) hybrid (49mpg/51mpg), and for the truly serious peak-oiler the Insight (60mpg/66mpg). However, she pointed out that zero oil would be displaced by 2020 if all vehicles went hybrid but we otherwise had business-as-usual, because the efficiency gains would just offset the increases in VMT (vehicle miles traveled).

Kelly spent a lot of time promoting the CNG Civic GX as being green and displacing imported oil by running on domestic natural gas. This came across as quite odd at a Peak Oil conference. I guess Honda hasn't kept abreast of the North American NG supply situation. Hopefully Kelly stuck around for some of the other speakers and can take the message back.

Honda's view of the ultimate solution is hydrogen fuel cell cars. They have built a few at \$1m each, and one is in use by the Spallino family in California. Kelly emphasized the hydrogen infrastructure planned by the Governor in California. There are major challenges to hydrogen, and Honda views it as 15-20 years away from commercial production.

Honda has no plans for plugin hybrids.

Steve Mut



Steve Mut searches for hard-to-find hydrocarbons.

Steve Mut is CEO of the Shell Unconventional Resources Unit. He talked about Shell's in-situ process for oil shale. There's oil shale in many countries, but the US has the good stuff (so to speak), and by far the most (75% of world reserves), mainly in Western Colorado and Eastern Utah. Compared to tar sands, oil shale is immature source rock, rather than ancient/degraded oil. Liquid from oil shale heating has H to C ratio greater than 1.2.

Shell has been working on in-situ oil shale production for 22 years. Their first small scale field test was in 1996. They basically use slow heating to crack kerogen and replicate the natural formation process of oil, only much faster. They did another recent small test, and are working on a final larger test before making a commercial go/no-go decision.

They use electric resistance heaters in wells and heat the rock to 600-700 degrees for 3-4 years. Light hydrocarbons come bubbling up, and via "smart carbon sequestration", gunky carbon residue is left behind. They estimate their EROEI is 3.5 (counting primary heat for power generation to gasoline output heat content). They get 2/3 liquids and 1/3 gas (inc propane/butane).

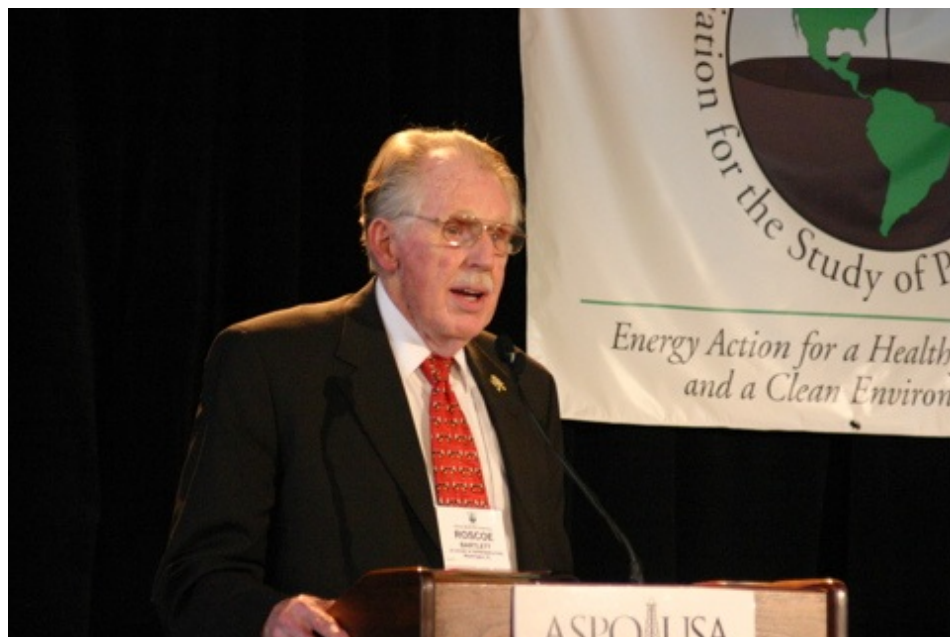
They use a freezewayl to isolate the process from groundwater, which would ruin both their thermal efficiency and the groundwater. This kind of freezewayl has been used in mining for years.

The overall CO₂ profile of the process is similar to average crude, and better than the process for handling the marginal barrel of imported heavy crude.

Further testing is necessary - Shell is still in research mode. However, if all goes well, the hope is to have commercial operation starting by the end of the decade.

In response to questions, Steve guesstimated that oil shale production would still be pretty negligible by 2015, but might, if things go really well, get to 5mbpd by 2030. He thought the chance of getting to 10mbpd was very tiny. If oil prices went to \$100/barrel, there might end up being a trillion barrels of reserves recoverable.

Roscoe Bartlett



Roscoe Bartlett

Next came Roscoe Bartlett ("I'm a conservative Republican but I try not to be an idiot"). Roscoe didn't tell me anything I didn't know, but he said it so well that I don't mind admitting I was in tears by the time he stepped down amidst a standing ovation. So was Dave, just to prove I wasn't the only girlie-man in the audience.

The gist of his presentation was that we cannot continue growing exponentially in a finite system, and we should not try and "fill the gap" between post-conventional-oil-peak supply and demand, because the higher we manage to get supply by the time we do peak in all liquid fuels, the worse we as a civilization are going to crash afterwards. We need to figure out how to have a high standard of living while using less and less energy. We must be focussed on how to move to renewables as quickly as possible before we terminally mess up the planet. He opposes drilling in ANWR - he's been there and he doesn't think the environmental impact will be that bad, but he doesn't think when we have such tiny reserves as a nation that it makes any sense to use them up as fast as we can. He uses as a running example the contrast between Easter Island (where the inhabitants of a fascinating civilization ended up "living in caves and eating rats and each other"), and the Apollo 13 mission where by acutely careful energy and resource rationing and cooperation, the astronauts managed to eke things out and get home safely.

What kind of world are we leaving for our grandchildren and greatchildren? What will they say about us - what terrible people we were that we used up this rich endowment in such a short time?

I think what is so incredibly inspiring about Roscoe is that he's speaking his truth straight from the heart without the slightest concern about whether anyone's going to approve or not. These things desperately need saying, and he's going to say them and damn the short-term consequences. The normal slippery politician spin-shit is utterly missing from the man. He's a hero, or at least he's now mine.

Paul Morris



Paul Morris planning for less oil.

Paul is a Principal in planning/contract management consultancy, and a progressive land-use expert. When he was invited to the conference, he didn't initially realize what he had to do with peak oil, but as he talked with the organizers, he realized his whole career has been about trying to mitigate peak oil, and it may be one of the most powerful tools ever to help advance his agenda. He focuses on avoiding sprawl: low density single use zoning. Sprawl impacts energy use (especially via VMT), the environmental, and obesity (there is now strong evidence that the more car-based a community, the more obese and higher blood pressure it's residents will be). He cited the impact of Atlanta olympics, which caused a 23% in auto traffic, a 28% drop in ozone concentration, and a 42% drop in children's asthma attacks. A powerful pointer that there are many costs to our car use.

He advocates *placemaking* - mixed use, higher density, development that is friendly to pedestrians and cyclists. It should have civic places, green spaces, and proximity to mass transit. However, transit system must attract riders - must have high quality development around the station and the station itself must be a place of character and distinction.

His basic pitch is this kind of development can lower oil use, versus the alternative. (To which I asked, yes, but how many percentage points of oil decline per year can you land-use types cover for us? They do not know the answer yet.)

Terry Penney



Terry Penney trains to change the battery in his plug-in hybrid.

Terry Penney is Technology Manager for the Freedom Car and Vehicle Technologies Program at the National Renewables Energy Laboratory. He's clearly a creative thinker worth following. He advocates a systems approach. We can't think about one aspect of the problem - we need green buildings plus energy efficient vehicles plus renewable energy sources to have a sustainable community.

He likes plugin-in hybrids - believes they make sense economically already, although "battery makers are all liars." He checks battery life in his own lab. Toshiba/NEC have announced a battery in 2008 with 80% recharge in 2 mins for electric cars.

He believes plugin-hybrids will be a huge enabler of wind capacity - cut peak utility capacity needed (because they hybrids can generate power in a pinch), and fill-in base load and can use power at especially windy times. However, this vision needs better batteries to work.

Peter Dea



Peter Dea delivers the truly scary news.

Peter Dea is CEO of Western Gas Resources, and has 23 years experience in the oil/gas industry. He gave a short, cogent, authoritative and absolutely chilling account of the natural gas supply situation in the US. I highly recommend checking out his slides [when ASPO-USA posts them at the proceedings](#) if you have a strong stomach.

Basically, the price soared after 2001 when excess capacity disappeared. Rig count has exploded (up 63%) but gas production is declining (2%). Current annual well decline is 31% (it used to be 17%), average yields/new well are dropping several percent per year, and **half of the gas flow required by 2012 has to come from fields that haven't yet been discovered**. He no longer thinks LNG is going to reduce price any - he thinks it will just prevent prices from exploding too much higher than they've been recently.

Panel on Municipal Responses



Beth Conover charms the dueling panelists into submission.

Next came a panel on *Intelligent Responses at the Municipal Level* moderated by Beth Conover, Special Advisor for Sustainable Development to Mayor Hickenlooper.

Pat Murphy



Pat Murphy demonstrating that small communities know a thing or two about tailoring

Pat gave an overview of the Community Solution - the peak oil conferences, promoting a low energy lifestyle, the Agraria planned community. Community Solutions believes we are going to need to relocalize, and rebuild family farms to solve the food problem. We need revision of zoning codes - zoning has done more to destroy community and reduce social capital, create emotional problems. I won't cover his remarks at length, since we [discussed Community Solutions a lot](#) before, and besides I'm starting to get pretty tired here.

Julian Darley



Julian Darley saying unpopular things

Julian Darley, author of *High Noon for Natural Gas* and founder of the Post-Carbon Institute warned us that he was going to say some unpopular things, and he did. He said them very articulately though: Big energy is the problem - it is destroying the planet. Climate change is coming faster and sooner than even the worst case scenarios. Growth is not sustainable - sustainable development is an oxymoron. Natural gas is going down fast and there is not much time to make big changes. We are agreed that communism is a bad system - it collapsed and good riddance. However, what if capitalism, the other great system of materialism, what if that is a bad system with no future too? He believes we need to move to relocalization and implement the depletion protocol - reduce economic activity inline with energy depletion.

Jack Pommer



Jack Pommer explains that politicians are just as bad as we feared.

Jack Pommer is Chair of the Transportation and Energy Committee of the Colorado Legislature, and after a pugnacious aside to Julian about how his desired society sounded like a post-nuclear world, launched into an amusing account of the Colorado legislature, a "system which is perfectly designed to produce the results it produces". The legislature has a 1 year budget cycle and 2 year terms. There are 8 year term limits - so no-one has any interest in issues with longer time horizon than 8 years. Ergo peak oil is only relevant if it happens sooner than that. Pommer has a personal interest in it due to crossing paths many years ago with Prof Bartlett. The legislature is "great at using short term solutions to short term problems, and short term solution for long term problems." He gave an example the energy assistance program which is designed to prevent poor people from freezing by paying their bills, which does nothing to lower energy demand. A proportion of the money needs to go to permanent solutions - like insulation.

We need to look at everything we do because everything we do prolongs the problem. Peak oil is going to be the single biggest issue facing whoever replaces me after term limits.

Rex Burkholder



Rex Burkholder

Rex Burkholder is a City Counciller from Portland, Oregon, and gave a passionate account of the progressive land-use policies of that city. They have been redeveloping the downtown with high-density mixed use planning, and as a result, vehicle miles per capita have started declining, and transit use is growing twice as fast as aggregate VMT.

And at this point, Beth Conover pulled off a minor miracle in extracting out of this panel of two in-the-trenches politicians and two radical social critics almost complete consensus on a huge range of points from the need to steadily decrease energy use, cars, supporting more family farmers, etc.

Finally, the big man who led the organization of the whole effort came to bid us adieu:



Steve Andrews giving concluding remarks.

I think Steve Andrews, Randy Udall and Co. did a fantastic job here. The range of perspectives represented at the conference was truly staggering, and the dialogue between them almost invariably civil and productive. I think this kind of event helps our understanding tremendously. Many speakers commented on how stimulating they found the event, relative to other events they talk at, and I have to second the sentiment. Great job guys.



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