



Energy Park One is a project with three components: starting with a National Stage; then an R&D Consortium and finally a “Brain Trust” of one million desktops. Airpark Village, the land owner is seeking a Joint Venture partner for \$200 million to grow Energy Park One as an R&D Campus for renewable energy. The capital contribution will result in 50% ownership in the 152 acres and the initial development of a National Stage consisting of five labs, a conference studio, tradeshow studios, hotel and business condos. Funding will be provided over a three year period with a \$10 million initial investment followed by subsequent investments of \$40 million and \$150 million. Once the real estate development is underway, a green bond issues can be packaged and sold, creating R&D Ventures and assisting in the creation of a tenant base that drives the use and pace of Campus Development. In addition the products and information produced by the consortium will be distributed electronically via media coverage of on site tradeshow and conferences.

<b>DATE:</b>	<b>FALL, 2008</b>
<b>PROJECT:</b>	<b>R&amp;D CONSORTIUM</b>
<b>LOCATION:</b>	<b>FT COLLINS, COLORADO</b>
<b>OWNER:</b>	<b>AIRPARK VILLAGE, LLC</b>
<b>ADDRESS:</b>	<b>1593 S. JAMACA ST. AURORA, CO 80012</b>
<b>PHONE:</b>	<b>303-674-5340</b>
<b>Email:</b>	<a href="mailto:lloydgoff@hotmail.com">lloydgoff@hotmail.com</a> <a href="mailto:lloyd@airparkvillage.com">lloyd@airparkvillage.com</a>

Estimates are that fully half the growth in the American economy in the last 50 years was due to funding of scientific and technological innovation. This submittal is a brief overview of an energy R&D project at Ft Collins, Colorado. Additional information may be obtained by going to the website at: [www.airparkvillage.com/bp](http://www.airparkvillage.com/bp)

## Synopsis

We are marketing and organizing a renewable energy “*Consortium*” that will bring in many sources of capital and package them all into *Green Bonds* (see glossary page 14) to fund R&D ventures. This will build an economic generator to attract future tenants. By adding an internet distribution to a million desktops, this network is expected to become a NATIONAL STAGE that will generate activity for Clean Energy R&D Commerce from a national audience, which in turn will create R&D jobs. The people who make money on renewable energy such as researchers, legal, media, consulting, engineering and capital providers will grow an “Economic Engine” for the industry and for our 66 city block site in Fort Collins Colorado. Participation will be marketed to all companies that want to develop and commercialize innovative energy prototype products. The consortium will manage the initial labs, Conferencing Studio and Tradeshow Studios. It is envisioned that the Green Bond competition will sponsor team formation of about 10 new ventures each year. Consortium members will receive a financial interest in the revenues derived from the operations of the labs, technology ventures and funding. Funding sources will include Government Agencies, Industrial Corporations, foundations, Associations, Insurance, Venture Capital, Wall Street and even network membership fees. Building the five research labs and Conference Studio will be the first step by the consortium to develop a NATIONAL STAGE and network. The developer feels an optimal combination of Consortium members is capable of generating billions of dollars in new business from commercializing the products of this research. Combining land with these new technologies will yield superior profits from multiple revenue sources and will collateralize the Joint Venture’s investment.



## R & D Consortium Campus

Energy Park One is a 66 city block (152 acres) new community starting with a 570,000 square foot development that will operate as a National Stage for Renewable Energy Commerce (see glossary page 14). It is presently in the initial development stages and will form an economic engine for billions of dollars in renewable energy R&D ventures funded by Green Bonds and other financial sources. This development project is located about one mile from downtown Ft Collins on land assembled by the developer Airpark Village LLC. This project is seeking alliances with partners to form an R&D Consortium with partners from technology, media, financial, construction and others sectors to operate this National Stage for renewable energy commerce. Events held here can be distributed *to desktops*.



This National Stage Complex (Conference Center and Tradeshow Hall) is shown above. A consortium of about 20 companies will provide products and services to manage this facility and to provide a stage for marketing Green Bonds for R&D investments of \$100 million per year. This will grow a tenant base at Energy Park One.

## Multiple Sources of Revenue

### ENERGY PARK ONE Joint Venture (EPO)

and ownership of National Stages

Revenue Potential \$50 million per year

\$200 mil Capital Partners 50%	R& D Consortium and AVL 50%
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### R& D VENTURES

and Ownership of Ventures

Revenue Potential \$100's of million per year

Brain Trust and other funding 50%	Venture Management and EPO 50%
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### MEDIA JV FOR BRAIN TRUST

and ownership of media revenues

Revenue Potential of \$100 million per month

Media JV Partner 50%	EPO -50%
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If 50% of Brain Trust revenues go into events and network services, this leaves 50% for R&D

## Consortium Levels of Participation

### Joint Ventures

AVL will sell one half of their side of the JV to members of the consortium gradually over five years. Twenty five shares of the Energy Park One Joint Venture will eventually go to Consortium members at 1% each for contributions of capital and services from \$1 mil to \$4 Mil per share. Each share will receive 1% of the profits from the facilities rental revenues plus 1% of the profits from the R&D ventures. Each member will provide one full time staff located on site and responsible for specific Joint Ventures in:

Research management	Software development	Real Estate Development
Treasury management	Engineering	Mapping
Venture management	Accounting	Data centers
Public finance	Educational services	Carbon Credit Trading
Securities Packaging	Telcom Services	Legal Services
Event management	Computer Services	

### Event Sponsors

Forty Business Condominiums on the first and second levels will be sold for \$1 million each to groups that are willing to sponsor events one week per year in the Tradeshow Hall and Conference Center and paying a daily rental for the space. They will receive their profits from the attendance, sponsors and ads sales on site. Targets are industry associations, Federal and State Agencies, corporations, National Labs, venture capital, universities, moving companies and foundations

## Brain Trust (Customers)

A consortium is planned to package the best of these research ideas each year and organize investments (green bonds) to a national audience of desktops composed of Banks, Government Agencies, Venture Capital, Wall Street, Engineers, Inventors, Politicians, Academia, Labs, Consultants and Industry. As each venture grows, the R&D Consortium will mine the *Brain Trust* for financial and supporting services to be added until a prototype is ready for demonstrations in the tradeshow hall. The National Stage will be a single place where all the parties can look for promising technology and ideas would accelerate America's transition away from oil into renewable energy. We see the potential market in the early years as 1/2 million customers paying \$50 per month to start and as the project grows, the marketing could expand. We see the potential market within 5 to 7 years as 1 million customers paying \$100 per month and as the oil crisis grows, the market could expand to many millions of desktops perhaps internationally. The \$100 per month would purchase services such as:

Conference and Tradeshow highlights,	chat
databases	venture offerings
who's who	polling/surveys
engineering tools	mapping
video on demand	TV documentaries

In addition there are "*pay per view*" opportunities for interactive services such as corporate training, seminars, live conferences. a variety of activities for audiences to learn, make contacts, generate revenues, participate in teams and make investments. About 50% of these funds would be needed to provide these services and the other 50% is planned for research ventures.

## Media

A single Joint Venture or alliance will be made to grow the desktop audience of one million paying subscribers. This media venture will package the event content into summaries, data bases, TV documentaries, news and training services. In addition advertising will be sold to supplement the revenues from memberships and pay per view.

## Long Range Opportunities

The first and most obvious is constructing a \$1 Billion R& D Campus for 5 million sf of mixed uses at Energy Park One over a 15 to 20 year period. Secondly a simultaneous opportunity is to grow renewable energy R&D ventures using Green Bonds to attract the business. Although it is envisioned to start at \$100 million per year, as the oil crisis deepens, it could easily grow into \$1 billion per year The third and perhaps most profitable part of all this is the media opportunity to market access to the content generated by the National Stages and advertising to companies wanting to be recognized as a part of the solution. This could become a multi Billion dollar per year opportunity.

## The Work Products

Consortium activity will create a digital consciousness originating in the National Stages (hub) and interacting with national audiences in four key areas:

**1. Energy:** generation, propulsion, storage, and networks

Each year a variety of energy R&D teams will be organized starting from conferencing ideas and growing into demonstratable prototypes shown in the trade show facility and finally into commercially viable products. At each stage, additional engineering, media, consulting, capital and management services will be added by the consortium to grow the ventures.

**2. Engineering:** with animation, GIS, 4D and someday holograms

Each venture will need engineering that can communicate the complexity of the idea to others and can be used for approvals, funding, constructing the prototypes and eventually the commercial systems. As complexity and scale grows, engineering needs to integrate mapping, drawing, animations, databases, geographic information systems, 3D and eventually holograms.

**3. Economics:** Districts, Franchises, Public Partnerships and Enterprises

Models for new kinds of infrastructure economics will be needed to fund these new technologies and should include District financing, public Franchises, Public Development Corporations and Governmental enterprises.

**4. Education:** political, professional, academic and corporate

A variety of media products will be needed to communicate and educate including: web site, databases, e-newsletters, cybercasting, TV documentaries, DVD, PDA TVs, radio, mail, posters, flyers. Types of outreach include training for professional, university course work, TV documentaries and seminars

### Evolution of Work Products

Since everything evolves, so too will this mix of work products and who knows where it will go. Look at what art has done with just three primary colors or what Wall Street has done with a simple business concept of corporations. Over time, the mix of these work products should produce energy applications in varying sizes, uses and features that we can't even imagine today and continue for decades until the need is exhausted if ever.

## Financing the Research

The national security of our country requires a multi-trillion dollar transition away from the expensive oil-based economy and into new economic energy models. Thus the need for such an Energy Park that tests and commercializes prototypes for billions of dollars of renewable energy projects for economic development of this emerging power industry. With the coming energy crisis, there is potential to generate up to 10 such ventures per year to be organized at Energy Park One. The National Stages will market funding to its audience. These is a potential funding sources that Energy Park One wants to fully develop

1. Brain Trust Subscriptions
2. Carbon Credit Investments/Trading
3. Matching funds with fed, State, foundations and donors
4. Venture Capital

All sources will be packages into securities that we will call Green Bonds. These will have a variety of funds and among them are accrued interest and royalties on commercialization.

## Green Bonds Packaged into Designer Structure

Issuer – EPO/Consortium

**Sources-** Membership fees, Carbon Credits, Venture capital, Dept of Energy  
Private equity, Agencies, Wall Street

**Initial Fund Size** - \$100 million each per year

**Interest Rate-** 5%

**Reserves** - \$20 million

**Leverage** - Earns bank fees for our deposit

**Bond rating** – Moody, based on non-depletion account

**Term** - Five years min 10 years max

**Tax benefits** - R&D incentives, Renewable Energy Credits

**Royalties** - 30 percent of the commercialization profits

**Collateral** - Land, building, technology and investments

(Modeled after European bond sales for green energy development)

## Carbon Credit Trading

Carbon trading was established under Kyoto as the mechanism by which countries and businesses could be encouraged to cut their output of greenhouse gases. These investments have to be put into clean energy. Both John McCain and Barrack Obama have pledged to introduce a federal carbon trading system if they succeed Bush. If so, that would do more than anything to propel this obscure market into becoming one of the most important elements in world trade – influencing the price of oil, gas, electricity and more. Last year the market was worth about \$64bn (£33bn, €41bn) according to the World Bank, more than doubling from \$31bn in 2006. Yet the value would soar to more than \$3,000bn a year by 2020 if the US introduced carbon trading, Point Carbon estimates. The US, the world's biggest annual emitter of greenhouse gases until overtaken by China last year, would account for about two-thirds of the total. He predicts that carbon trading legislation will lead to the “development of numerous ancillary climate change-related businesses, which will provide an immeasurable boost to the global economy that may prove to be bigger than the tech boom”. (See Appendix for details)

## Matching Funds with Federal Agencies

Last year Congress gave the Department of Energy \$5 billion to spend over the next 5 years on renewable energy and created ARPA-E in the Energy Research Act of 2007. By the time this EPO Joint Venture could get the National Stages ready we plan to ask DOE to match funds with EPO for research projects. (See appendix for more details)

## Venture Capital

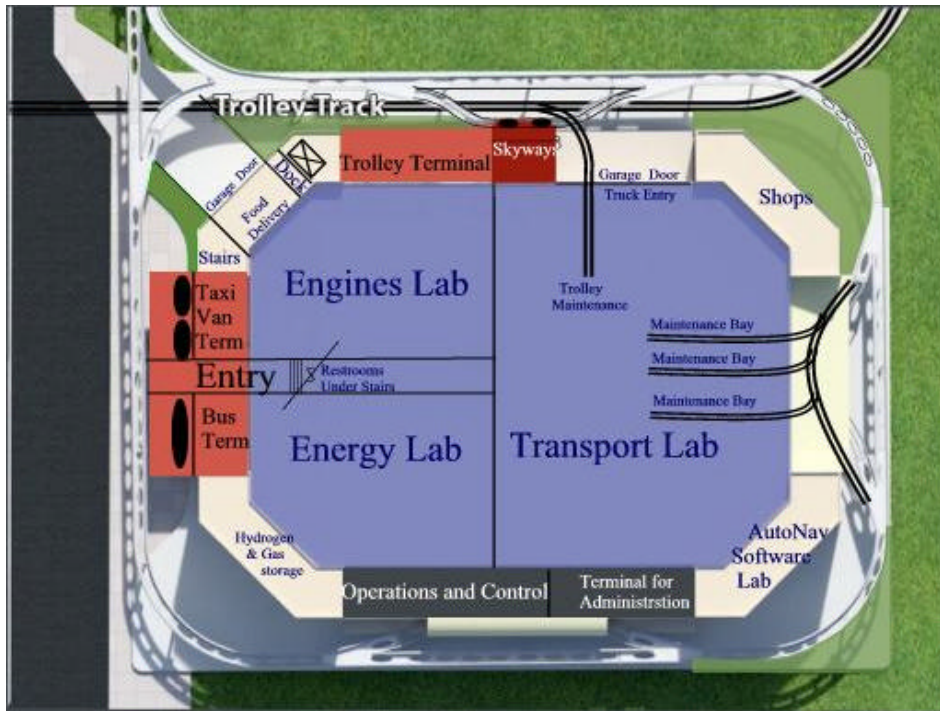
The global investment in clean energy grew 41% in 2007, reaching \$117.2 billion, according to analysts at New Energy Finance, Ltd. GE Energy Financial Services, now plans to invest \$6 billion in renewable energy by 2010 the company said. Money is flowing into clean energy and related products from everywhere and will need to sustain a 20% annual growth through 2013 to meet global targets for clean energy. This is going to produce billions for renewable energy R&D. There are now hundreds of venture capital firms chasing this new investment industry. (See appendix)

## R&D Consortium Facilities

A single place where venture capital, legal, management, engineering and other supporting services could look for promising technology and ideas gleaned from a national audience that will accelerate America's transition away from oil into renewable energy

### The Initial Labs

**1. Transport Lab** - Up to \$5 million will be allocated for a ¼ mile automated guideway transit test track (Skyways) to be built around the perimeter of the lab's building. The track will validate construction costs and demonstrate the automated operations for future commercialization. This



initial test track will mature into an activity center for all transportation components serving the future project. If the test track proves that costs can be held under \$15 million per mile, a huge \$100 billion market will emerge, as oil becomes more expensive. The best components of all the subsequent technologies can be built along the Parkway as a one-mile operating demonstration. In addition to Skyways, we envision a test track

around the outside perimeter of the property for trolleys, buses, cars and commercial vehicles using AutoNav systems and renewable energy.

**2. Energy Lab** - The allocation for this lab will be \$2 million and the lab will be temporarily housed in a hangar. The major payoff here concerns distributed generation where energy is generated within a building and any surplus can be sold back to the power company. The energy lab will start by collecting state-of-the-art energy technologies in wind, solar, hydrogen, biomass, geothermal and other renewable energy sources. A promising renewable energy is based upon the separation of hydrogen from water. This separated hydrogen can then be used to power fuel cells that work as a battery to provide electricity. General Motors and Honda have are working on home generators as shown at right. General Electric has announced a new *Electrolyzing* technology that lowers the cost of this process down to \$3 per kilogram from \$8 per kilogram. One kilogram of hydrogen is roughly equivalent to a gallon of gas in energy content. A new type of infrastructure that uses this technology may be able to distribute the hydrogen by underground lines to buildings at Energy Park One, replacing hydrogen used by the fuel cells that provide power to the buildings. (set net zero energy goal)



We will explore, building a technology mix of energy infrastructures to power 30 to 50 small buildings (100,000 s.f – of four stories each) at Energy Park One. Included will be a smart network that can generate its own power, move it to where it is needed and sell the surplus to the power company (net metering). Such a demonstration of alternative energy infrastructure would have a huge market, as our existing energy grid grows more expensive with higher oil costs. The smaller fuel cell technology is also destined to grow into a huge industry as fuel cells will eventually be used in everything from cars to cell phones, appliances, pumps, doors, toys, streetlights, lawn mowers and watches. Larger fuel cells can be used in trains, boats, semi tractors and military vehicles. The size of the battery market easily exceeds \$30 billion today and the result of implementing this new technology will provide cleaner, cheaper energy that reduces our dependence on fossil fuels. The commercialization potential is in the *hundreds of billions of dollars*. The energy lab will begin by purchasing or joint venturing a variety of technologies that can be compared by cost versus performance.

We expect participation by the City of Fort Collins Utilities, which is already working with Colorado State University and other local groups who have some very advanced hydrogen technology that we would like to use in our research. We also plan to host as much of the Colorado renewable energy industry as we can attract. Members of this emerging industry include the governor's office, national labs, members of congress, corporations, cities, institutes, societies and utility companies.

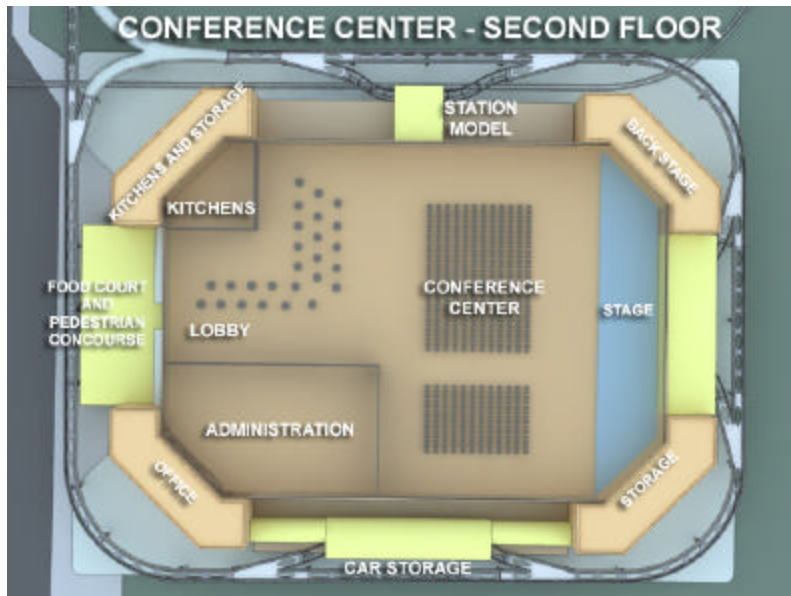
**3. AutoNav Lab** - The allocation for this lab is \$1 million. The lab will be housed at the Administrative and Marketing Center in the Terminal Building. Most any vehicle, system or operation that involves repetitive motion can be automated by utilizing feedback systems. These include cars, trolleys, trash collection systems, elevators, maintenance routines, cargo delivery, traffic control, mail, water and more. Our software lab will develop products that automate navigation of these processes so that less labor is required to facilitate the operation. The first task is to implement the automated guideway transport system (Skyways) and its driverless vehicles. The size of this software market is difficult to estimate today, but many of the futuristic systems won't work without this software for automating navigation. The commercialization potential is high.

**4. Engines Lab** - We are allocating \$1 million to start this lab and hope to attract CSU with its engines lab team. Engines are the sources of much pollution and this lab will focus on technology that will produce cleaner and smaller engines. A variety of engines will be studied including piston, magnetic, compressed air, flywheel, binary and electric. No oil-based fuel engines will be used or considered.

**Video Engineering Library** The common denominator between land and technology infrastructure is engineering. A tele-library will be built to archive and distribute the results of both the land and research work. Eventually, it will be accessible by those on-site in three-dimensional format, thus allowing innovators to more fully explain the workings of their vision with capital investors. The tele-library will have a staff that assists research users in creating and disseminating a variety of Telematic Services including commercialization. The marketing format will develop into 3D engineering design visualization. Such a network will allow greater participation by stakeholders and position the project as a Global Village. Today the display function of 3DTV is already demonstrate-able. This is a huge broadband transmission that can be handled by fiber optics. Telecom will step into 3DTV next, virtual reality TV tomorrow and holographic TV eventually. Tomorrow's engineering will appear as an artificial reality that can be locally manipulated.

## The Conference Studio

Above the research labs on the second level will be a 80,000 s.f. teleconference Studio with a food court and the administrative offices for the Consortium. Issuing Green Bonds described earlier could fund this phase. These bonds will also be administered through offices on this level. Conference attendees will be able to visit the research labs below and ride the Skyways test track around the building. Seating in the conference Studio will be from 3 to 5,000. The estimated costs for this phase are \$40 million. This includes Intermodal terminals for buses, vans, taxi, trolley and Skyways providing links to the city and region. The telecom distribution network will

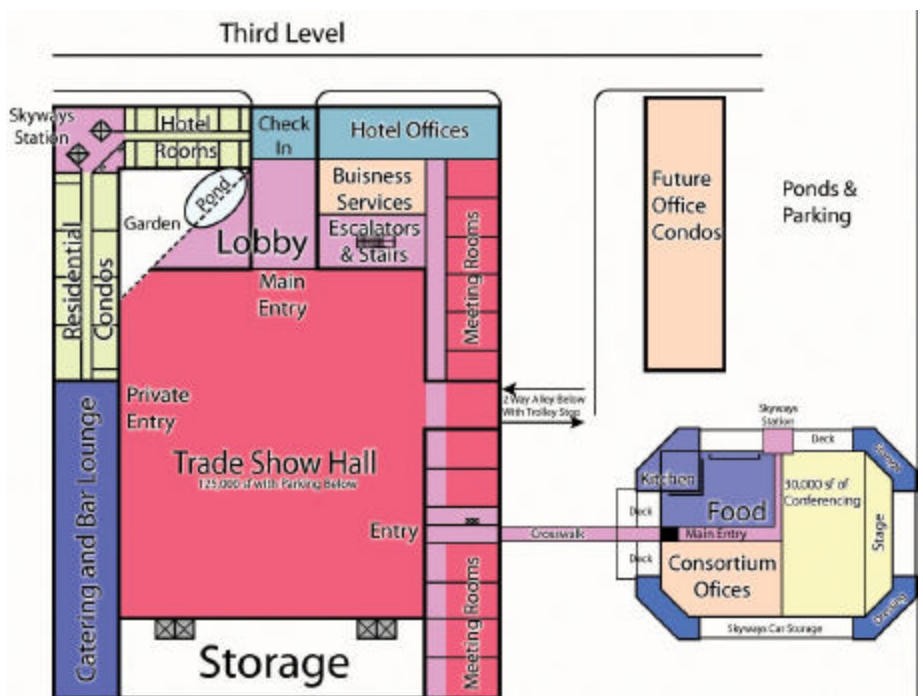


allow events and services here to be broadcast to remote desktops. The market potential in the early years from membership and advertising is \$50 per member or \$50 million per month. This will pay for a lot of staff speakers and even investment in R&D Ventures. As the oil crisis deepens and the price of oil doubles or even triples from today's \$100 per barrel, the membership, pay per service and advertising could also triple revenues. Conference Studio is shown here is to be built above the 5 Research Labs and

surrounded by the Skyways ¼ mile track. The food service is shown in the upper left and the administration for R&D Consortium is the lower left. Between them is the main entry. This will seat from 3,000 to 5,000 people and feed them.

## Tradeshow Hall and Studios

With \$100s of billions at stake a Trade Show facility is needed for energy prototypes to display their technology and find capital, users and consultants to assist in their integration into the commercial markets. Presently this is done traveling the circuit to many convention centers across the land. But these events are hard to find. A single place where venture capital, legal, management, engineering and other supporting services could look to promising technology and ideas would accelerate America's transition away from oil into renewable energy. This



facility combined with the Conferencing Studio could do that and attract the supporting services to office at Energy Park One.

### Business Condos

Approximately 40 condos will provide a window on the action of the Tradeshow hall for members of the R&D Consortium to establish business offices. These will be about 2000 sf each and located on the first and second floor underneath the tradeshow hall

### Storage and Transfer

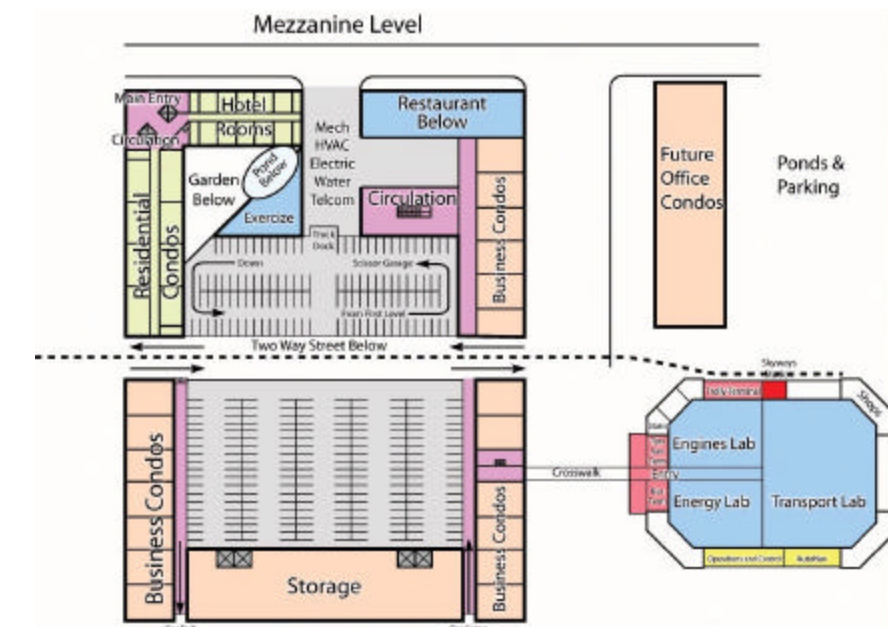
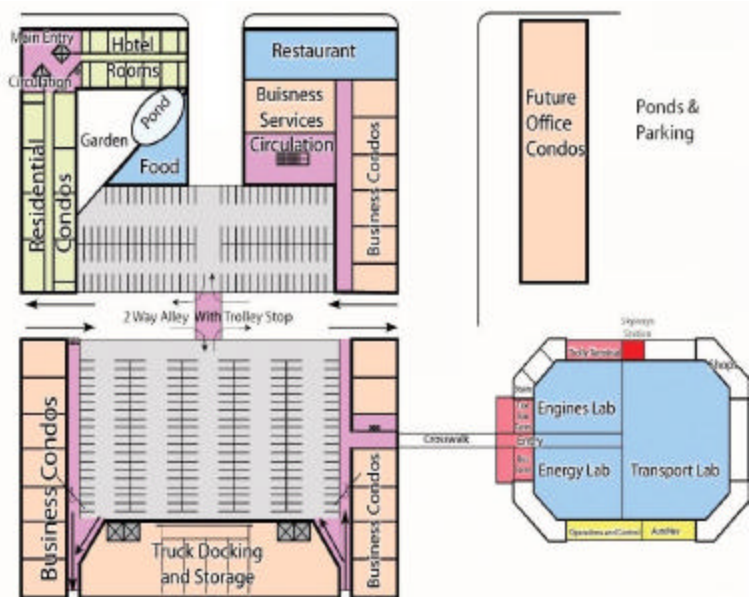
The southern end of the tradeshow hall is space for docking, storage and transfer of heavy equipment used in the Tradeshows. This could be a condo or a rental

### Consortium Office Condos

The twenty Joint Venture members of the consortium have their staff housed on site in the building above the conference center shown as “Future Office Condos”.

### Trolley Stop

A trolley route and road that rings the outside perimeter of the entire project will go thru the tradeshow parking garages and have a stop between the two garages. This will divide the first two floors into two individual buildings with the third level connecting them for the tradeshow hall.



### Two Levels of Parking

The 40 business condos surround two levels of parking with about 320 parking spaces on each level. These will be operated as a common area for the owners Association.

## Hotel at Trade Center

A 100 room hotel is part of the package including a 125,000 sf tradeshow facility shown below. The street level contains retail and restaurants. About 50 more are planned as condos to be sold to venture capitalists and other supporting services that want a window on the activity of the trade center. These will be sold to Investment Companies that want to sponsor on site conference series, seminars and meetings with local R&D vendors to learn their technology and financial needs. They will be marketed as highly stylized two level office condos built around gardens with attached garages accessible from the outside of each building. The gardens will have pools, lounges and room services for entertaining. Each unit will include conferencing, administration and kitchens on the first level and lodging accommodations on the second level for investment companies to rotate their employees through the R& D Center for short or long stays. In short, they are branch offices.



## Marketplace

The largest challenge in the history of America will be the transition away from our oil-based economy into an alternative. As oil prices rise, everyone will be affected. Within ten years, oil may become so expensive that only the military, corporations and government will be able to afford it. With the world running out of cheap and easy to access oil, the increasing costs will lead to huge disruptions of our economy. The International Energy Agency has stated, *“The world has never faced a problem like this. The problem will be pervasive and will not be temporary. Oil peaking will be abrupt and revolutionary. It will become a huge disruption to the economy and requires massive mitigation more than a decade before new technologies can have impact”*. We have a \$12 trillion oil-based economy based on a creaky, worn and undersized transportation network that is about to become very expensive to maintain. Of all America’s problems with drugs, immigration, terrorism, healthcare, deficits, AIDs, etc; only *“Oil Peaking”* affects everyone in their daily lives, as everything will become more expensive. *Boone Pickens Interview CNBC on why the price of oil is rising: We have 85 Million barrels per day (bpd) of supply and it is depleting at 6% per year. Just to stay even we need to find 5000 new wells per year that produce 1,000 barrels per day. Yet, projections call for 125 mil bpd of demand by 2015. The price can only rise. We can begin to prepare for this now by encouraging research and new thinking on transport, alternative energies, new land use patterns and other infrastructure changes to replace our dependence on the oil economy. Whether we wait for the economic strangulation of increasing gas prices or suffer the sudden interruptions of oil from hurricanes, terrorism, worn-out pipelines or war in the Middle East, our national security is at stake in the transition away from oil dependence. DOE predicts it will take many trillions of dollars to replace our dependence on foreign oil. The national scene is beginning to see billions of dollars announced for R&D that could financially support a permanent exhibition and conferencing facilities as shown above. The vision behind the facilities shown on the following pages is to attract a national*

audience for funding and growing renewable energy R&D commerce. Thus is the need for research campuses dedicated to experimentation and new models of infrastructure.

The State of Colorado aspires to become a leader in renewable energy and needs a place to congregate capital, ideas, technology and management. Our location in Fort Collins is one of the most active and talented communities in Colorado and can provide the expertise and research manpower. To date, over 50 companies, CSU and the City are all clustered into a study group concerning what to do as a community. CSU is part of a Research Collaboratory with CU, School of Mines and the National Energy Labs.

## Tax Credits

America is abuzz with talk about using carbon credits to attract capital investment for renewable energy solutions. There are many systems already operating, but there exists no state or national carbon credit policy. The Chicago Climate Exchange (CCX). Carbon credits and emissions offset programs are used by those companies wishing to make up for their own emissions by purchasing credits from those companies that don't generate carbon emissions. It's a system based on the notion that overall emissions will be lowered if those companies that reduce or eliminate their emissions sell credits to those companies that can't or won't reduce theirs. Colorado is in a strong position in that it is very green-centered and is in the position to generate carbon credits as lower-emission companies come online in our state. As more research and development is focused on alternative energies and alternative transit, the position only becomes stronger. CCX is the world's first and North America's only voluntary, legally binding rules-based greenhouse gas emission reduction and trading system. See <http://www.chicagoclimatex.com>

The California Air Resources Board (CARB) recognized that California would not be able to clean up its serious air pollution without putting cleaner cars on the road. CARB established the Zero Emission Vehicle (ZEV) program in 1990 to meet health-based air quality goals. Since then, several northeastern states have decided to adopt California's LEV program (including the ZEV program) in place of less stringent federal tailpipe standards. The ZEV program was designed to catalyze the commercialization of advanced-technology vehicles that would not have any tailpipe or evaporative emissions. Originally, the ZEV program required that 2 percent of new vehicles produced for sale in 1998 and 10 percent of new vehicles produced for sale in 2003 would be zero emission vehicles. Each manufacturer selling cars is penalized \$5000 for not meeting these state standards. Builders of ZEV vehicles can receive as much as 40 credits for each vehicle sold and sell these credits to the other manufacturers. See more on line at: <http://www.arb.ca.gov/msprog/zevprog/zevprog.htm>

There are many capital entities at work in foundations, public funds and of course government agencies. One of the best examples are foundations, which are making billions of dollars in pledges over the next three years for the reduction of global warming. There are many sources of capital willing to fund renewable energy research and development. Once we have the conferencing, exhibitions and Stages operational, Energy Park One will certainly qualify for tax incentives, carbon credits, grants and venture investments to fuel this economic engine. The R& D Consortium will organize and capitalize from 30 to 50 new R&D Ventures in the \$20 million range over the next 15 years. The commercialization potential for these new products will be huge.

# Appendix

## Glossary

**Airpark Village LLC** - The original developer that assembled and entitled the site.

**Airpark/Goff LLC** - The manager of Airpark Village LLC and 50 % owner of the project.

**Assemblage**- The first purchase was an airpark of 80 acres then added three more parcels of 72 acres

**Business Improvement District (BID)** - An improvement District with an add on tax of 15 mils that build the on site infrastructure.

**Carbon Credits - investments** in renewable energy projects by companies to off set their carbon use

**Energy Park One** - The name of the proposed Joint venture to build a \$1 billion project of 5 million sf of mixed uses.

**Economic Engine** - A magnet that attracts tenants, developers and investment to the project

**Green Bonds** - Any funding that goes into renewable energy R&D ventures by the Consortium

**Metro District** - An improvement District with additional powers that builds improvements off site in the surrounding area such as roads, parks, flood improvements, signage and ...

**Renewable Energy Commerce** - The type of business the project will focus on

**R& D Consortium** - a Joint Venture with a dozen companies to promote renewable energy R&D

**5 Research Labs** - The first building construction planned that is part of the economic engine

**Intermodal** - A series of interacting terminals for trolleys, buss, van, taxis, cars and Skyways

**National Stages** - a \$200 million project with many components below to capture a national audience

**Conference Studios** - an 80,000 sf facility over the 5 labs that seats 3 to 5,000 with a restaurant

**Pay Per view to Desktops** - a means of distributing over the Internet to national audience

**Tradeshow Studios** - 125,000 s.f. exhibition halls divisible into 3 studios and 10 teleconference rooms for energy prototype commerce

**Mulberry Corridor Owners Association** - The local neighborhood of 2000 aces and 500 businesses

**Mulberry District** - The planned semi governmental entity that uses the new tax base for improvements

**Overall Development Plan** - The preliminary plan that deals with roads, storm water and land uses

**Floor Area Ratio** - One s.f. of building can take place is each sf of land owned

**Plat** - A sub division up to 19 tracks can be sold off to developers with entitlements

**Master Street Plan** - A traffic Study showing how the local area can handle the projected traffic

**Skyways** - An elevated and driverless new type of inexpensive transport to be showcased

**Storm Water Management** - The critical studies showing how to discharge rain water

## ARPA-E in the Energy Research Act of 2007

Pursuant to the recommendations of the Committee on Prospering in the Global Economy of the 21 Century, the Energy Research Act of 2007 creates a new research agency called ARPA-E: the Advanced Research Projects Agency — Energy. ARPA-E's mission will be transformative, out-of-the-box research to break America's addiction to oil and other scarce or nonrenewable fuels. They will be charged with creating brand-new energy technologies and strategies, all to ensure that America's global economic competitiveness is not compromised by our energy needs in the coming decades. Key features of the Baucus ARPA-E are as follows:

**Modeled after DARPA:** ARPA-E takes its inspiration from the Defense Advanced Research Projects Agency, or DARPA. This Pentagon research office developed the Internet and stealth technology.

**Independent:** The bill creates ARPA-E outside of the Department of Energy, instead of inside the Department, to maintain the agency's independence as it pursues new energy strategies.

**Direct access, direct responsibility:** The Director of ARPA-E will be appointed by and report directly to the President.

**Small and elite:** ARPA-E will be a small agency with a total of 250 people. A minimum of 180 would be technical staff. The director and four deputies would lead ARPA-E.

**Engaged, expert staff:** ARPA-E staff will be required to have a technical background. The agency would use the Experimental Personnel Authority designed for DARPA, enabling higher salaries and faster hiring than for typical Federal employees. To maintain an intense, innovative focus, technical staff would be limited to 3 to 4 years at the agency. Managers would be limited to 4 to 6 years. The director can give both groups extended terms of employment at his or her discretion.

**Full funding:** The Energy Research Act of 2007 recognizes the magnitude, importance and urgency of ARPA-E's task, and provides appropriate funding as follows:

- FY2008: \$300 million
- FY2009: \$600 million
- FY2010 \$1.1 billion
- FY2011: \$1.5 billion
- FY2012: \$2 billion

**Flexible contracting:** For contracts, the agency would use the DARPA procedure, which allows more flexible contracting arrangements than are normally possible under the Federal Acquisition Regulations. To ensure that ARPA-E would conduct innovative research, 75 percent of research projects initiated by ARPA-E would not be peer reviewed.

**Real incentives:** ARPA-E would be authorized to award cash prizes to encourage and accelerate energy research accomplishments.

**Room for growth:** The Energy Research Act of 2007 requires a report by the end of fiscal year 2008 on whether ARPA-E needs its own, in-house energy research lab.

## Clean Energy Investment Exceeds \$117 Billion in 2007

The global investment in clean energy grew 41% in 2007, reaching \$117.2 billion, according to analysts at New Energy Finance, Ltd. Wind power drew the greatest amount of investments, followed by solar energy and energy efficiency, while biofuels investments slowed due to surging costs for crops. The majority of the funds, \$54.5 billion, were used to finance assets such as biorefineries, wind farms, and solar power plants. In fact, nearly half of that went toward wind energy investments. Meanwhile, solar project investments of \$5.9 billion represented an 82% increase over investments in 2006, driven partly by large solar energy facilities in Spain and Italy. Solar energy also became the leading clean energy candidate for venture capital and private equity investment, attracting \$3 billion of new equity. Much of that went toward solar energy startups in the United States; HelioVolt alone raised \$101 million. Clean energy stocks also did well, as thin-film solar power company First Solar led the pack with a nearly 8-fold increase in price. See New Energy Finance's press releases on clean energy investments ([PDF 32 KB](#)) and stocks ([PDF 85 KB](#)). [Download Adobe Reader.](#)

If all that sounds good to you, consider this: to meet current climate change abatement targets, New Energy Finance estimates that clean energy investments will need to triple over the next five years. The company projects that investments in renewable energy generation facilities and biorefineries will need to sustain a 20% annual growth through 2013 to meet global targets for clean energy. Among the companies stepping up to that challenge are Najafi Companies, LLC, which is committing \$100 million to a new startup portfolio company for alternative energy, and GE Energy Financial Services, which now plans to invest \$6 billion in renewable energy by 2010. The GE company doubled its goal after meeting its \$3 billion goal a couple years early. See the press releases from New Energy Finance ([PDF 28 KB](#)), [Najafi Companies](#), and GE Energy Financial Services ([PDF 104 KB](#)).

## Carbon Clincher: US Weighs Emissions Trading

By Fiona Harvey and Stephanie Kirchgaessner

Published: June 17 2008

Devoid of American participation, the international market in carbon dioxide emissions is a partly formed creature whose health remains uncertain. When President George W. Bush took office he refused to ratify the United Nations' Kyoto protocol on climate change and attempts to set up a domestic system of trading emissions have been thwarted. But with Mr Bush's departure next January, that is likely to change. Both John McCain and Barack Obama have pledged to introduce a federal carbon trading system if they succeed him. Though a proposal for such a system failed to secure enough support for a vote in the Senate this month, many think it will return successfully under a new administration. If so, that would do more than anything to propel this obscure market into becoming one of the most important elements in world trade – influencing the price of oil, gas, electricity and more. “It would have a very big effect,” says Henrik Hasselknippe, director at Point Carbon, a carbon market analysis company. “It would be a huge event.”

Carbon trading elsewhere has been growing solidly since 2005, when the European Union started its trading system and the Kyoto protocol came into effect. Last year the market was worth about \$64bn (£33bn, €41bn) according to the World Bank, more than doubling from \$31bn in 2006. Yet the value

would soar to more than \$3,000bn a year by 2020 if the US introduced carbon trading, Point Carbon estimates. The US, the world's biggest annual emitter of greenhouse gases until overtaken by China last year, would account for about two-thirds of the total. "The market is already preparing for a new policy shift," says Paul Newman, managing director of Icap Energy, an energy trader, in London. "US participation really does matter." The investment in carbon-cutting technologies that would be stimulated by a global carbon price could also benefit the world's economies, according to Mitchell Feierstein of Cheyne Capital, the fund management company. He predicts that carbon trading legislation will lead to the "development of numerous ancillary climate change-related businesses, which will provide an immeasurable boost to the global economy that may prove to be bigger than the tech boom".

Conversely, it could prove fatal for the carbon market if the US shunned carbon trading for much longer. The European Union's bloc-wide emissions trading scheme would be in danger, as businesses and politicians would clamour for a more competitive basis with US industry, says Mr Hasselknippe, adding: "It's critical for the carbon market to get the US involved in the long run." Worse, without US approval a successor to the Kyoto protocol – the main provisions of which expire in 2012 – is unlikely, threatening to end a flow of carbon trading investment from rich to poor countries. Carbon trading was established under Kyoto as the mechanism by which countries and businesses could be encouraged to cut their output of greenhouse gases. Under a provision of the treaty called the clean development mechanism, rich countries can meet part of their obligation by investing in projects that cut emissions in poor countries. These projects, which range from wind turbines and solar power to the elimination of industrial gases, receive carbon credits from the UN, which rich countries can buy to make up their target. In the EU, heavy industries include power generation, steel and cement-making have for three years been subject to restrictions on how much carbon dioxide they can emit. They each receive a certain quota of carbon permits and companies wishing to emit more must buy extra permits from cleaner businesses with spares. The scheme, called EU ETS, was the world's first mandatory cap-and-trade system for carbon dioxide.

The two systems are linked, with the EU soon to allow businesses to buy a limited number of extra permits in the form of carbon credits issued by the UN. If the US were to enter the carbon trading market – which is unlikely before 2012 – it would probably institute some form of similar mechanism, by which UN credits could also be traded within the US. Carbon credits under the Kyoto protocol vary widely in price but most are cheaper than those in EU ETS, reflecting the lower cost of cutting emissions in poor countries. That can help to depress the carbon price in spite of high oil prices. "The nice thing about a cap-and-trade system is that emissions reductions are led by the invisible hand towards the places where the cost of reductions are at their lowest," says Mr Newman. Yvo de Boer, the UN's top climate change official, with responsibility for overseeing the next year and a half of negotiations on a successor to Kyoto, says market-based mechanisms such as carbon trading are essential to bringing down emissions, as they stimulate the high levels of private sector investment needed to kick-start a low-carbon economy. The stance of the two White House contenders "augurs well for the continuation of the carbon market". Paula Dobriansky, undersecretary of state for democracy and global affairs, says the US is in any event on course to forge the underpinnings of a new global agreement under the Bush administration, which is prepared to sign up to "binding international agreements" requiring emissions cuts.

Emissions trading would be nothing new for the US, which pioneered such mechanisms in cutting the emissions of pollutants such as sulphur oxides and nitrogen oxides in the 1990s. In addition, the US would be able to learn from the EU's experience, says Mr Feierstein. America would "be able to create a much larger-scale cap-and-trade model with meaningful, real, permanent and additional emission reductions based on broad-based consensus". He warns that any legislative proposals

should contain long-term targets, saying: “Any climate change legislation needs to create a degree of long-term policy certainty that offers incentives to ensure and engage the investment community in the long-term deployment of capital in the new and innovative technologies supportive of low-carbon economies, which will create expedited solutions to global warming.” While the proposed legislation introduced this month did not muster enough support for a vote on the Senate floor, most analysts agree that the bill would serve as a blueprint for a law that would pass with the support of a new president.

Environmentalists and others who support a cap-and-trade system say the debate proved that a majority of lawmakers agreed on the basic principles but that a detailed plan would face significant hurdles, both from Republican lawmakers and Democrats from regions that could be economically hit by a cap-and-trade regime. Paul Bledsoe, director of strategy at the Washington-based National Commission on Energy Policy, says the Senate debate showed that a “broad but fragile” consensus exists for an economy-wide cap-and-trade system that would limit costs and offer incentives for developing countries. “Beyond that”, he adds, “problematic issues will arise”. Those include determining how permits to emit are allocated among polluting companies and individual US states and how thousands of billions of dollars in revenue will be spent.

Myron Ebell, director of energy and global warming policy at the Competitive Enterprise Institute in Washington, has long been an opponent of climate change legislation, arguing that global warming will not have the catastrophic effects predicted. He says high oil prices and the worsening economic outlook will play a big part in any debate over a US cap-and-trade system. “I remain hopeful that we will be able to defeat cap-and-trade legislation in the next Congress because I can’t see many members of Congress wanting to tell their constituents that they’re just going to have to get used to escalating energy prices for the next several decades in order to enrich big business,” he says. “The background for making a convincing case for energy rationing is most unpropitious: people are angry about high gasoline prices, EU emissions are rising, Chinese emissions are soaring, global temperatures are flat and it is becoming ever clearer that cutting emissions is going to be enormously expensive for consumers.” Legislators will also have to grapple with issues such as how low to set the ceiling on industrial carbon emissions, which industries to cover and how to ensure that companies that cut their emissions before the cap was imposed are not penalized.

In a hint of the tough debate that is likely to ensue next year over the shape and scope of any system, 10 Democratic lawmakers said in a letter to Senators Harry Reid and Barbara Boxer this month that the structure of a cap-and-trade bill would have to be designed to “balance” the burdens of compliance costs across states and regions that might be most severely affected by the legislation. “While placing a cost on carbon is important, we believe there must be a balance and short-term cushion when new technologies may not be available as hoped for or are more expensive than assumed,” they wrote. Indeed, Eileen Claussen, president of the Pew Center on Global Climate Change, says the biggest fights on Capitol Hill will centre not on carbon targets or timetables but on how future legislation will contain costs, invest the revenue and deal with regions that rely on coal. “We will have to find a way to draft legislation that can garner support from the middle without losing senators from the left,” Ms Claussen says. “On the one hand, it is good that we have a lot of senators who think this is a good idea. But for those who thought this was going to be relatively easy, it is going to be relatively hard.” The fate of more than just the US carbon market hangs on the outcome.

## **Conoco Phillips Billion R&D campus development nearby**

The oil giant buys the 432-acre Louisville site to build a renewable-energy hub to the glee of eco-devotee officials.

By Margaret Jackson

*The Denver Post*

[Article Last Updated: 02/21/2008 01:53:35 AM MST](#) Touting his vision for a new energy economy and ending months of speculation, Gov. Bill Ritter on Wednesday revealed that ConocoPhillips has purchased the former StorageTek campus in Louisville. Houston-based ConocoPhillips plans to build a new Global Technology Center and Corporate Learning Center on the 432-acre campus, which it recently purchased from Sun Microsystems. The technology center will serve as a hub for the company's research and development of renewable energy and high-tech carbon-fuels recovery. "This will push the new energy economy for Colorado," Ritter said. "This will provide economic security, environmental security and energy security." The identity of the buyer that paid \$55.6 million in January for the campus at the northwest corner of U.S. 36 and the Northwest Parkway had been shrouded in mystery and was unknown even to Ritter until early Wednesday. Ritter said he got a phone call Wednesday morning from ConocoPhillips' vice president of real estate, who told him of the company's plans. The company told its employees Wednesday afternoon, Ritter said. Company officials attributed their decision to the concentration of education and research institutions in the area. "When you look at the institutions here — the National Renewable Energy Laboratory, Colorado School of Mines, CU, CSU and DU — those sorts of central research and educational centers contributed to the attractiveness of this site," said Perry Pearce, manager of state government affairs in Colorado for Conoco Phillips. While the number of jobs the region will gain is still in question, the company will bring thousands of employees to the training center each year. Economic-development incentives for the project have not been discussed — but not ruled out.

ConocoPhillips is the fifth-largest corporation in the nation and the ninth-largest internationally. It has annual revenues of \$170.5 billion and a market capitalization of \$129.82 billion. "It's a perfect example of Colorado's new energy economy, and we are very much looking forward to welcoming ConocoPhillips to Colorado," said Matt Cheroutes, director of communications and external affairs for the state Office of Economic Development and International Trade. "This will lend to our ability to attract companies to Colorado's new energy economy. This certainly could mean opportunities for significant job growth in the state."

Tom Clark, executive vice president with the Metro Denver Economic Development Corp., said the deal could be the biggest economic-development announcement in the region's history, surpassing the United Launch Alliance joint venture between Lockheed Martin and Boeing Co. "That one company has \$414 million in annual economic impact," Clark said. "We don't know how many will be employed (by ConocoPhillips), but given the size of the land, this could be the largest project in the history of the state." Louisville City Councilman Bob Muckle noted that ConocoPhillips will bring much-needed diversity to the U.S. 36 corridor, which is dominated by technology companies. The area's office market has struggled to recover from the technology bust. ConocoPhillips officials will be in town next week to meet with city officials and business leaders, Louisville Mayor Chuck Sisk said. "They're trying to better understand Colorado and our mindset in Colorado," Sisk said. ConocoPhillips already has a history in the state. It has worked with NREL since 1993, said Gary Schmitz, a spokesman for NREL. "We've been working with CU and companies to make Colorado a center for these technologies and ConocoPhillips has been a partner," Schmitz said. "It's evidence that Colorado is a growing center for renewable research and development." Many said attracting ConocoPhillips is a coup for Ritter, whose agenda includes promoting renewable energy. After his election, he pushed the legislature to pass a package of bills jump-starting what he calls the new energy economy. He followed up with a climate action plan calling for clean-car standards and

cutting emissions from electric utilities. The climate plan requires 20 percent of large-utility electricity to come from wind and solar power and the burning of beetle-ravaged trees and other biomass by 2020. "It certainly reinforces the great work that Gov. Ritter has been doing to grow this renewable-energy cluster," said Joe Blake, president of the Metro Denver Economic Development Corp. "This just signals to me that Colorado is at the center of this right now on a worldwide basis." ConocoPhillips plans to raze existing buildings on the campus next year and occupy it by 2012.

Santa Clara, Calif.-based Sun, which bought StorageTek for \$4.1 billion in 2005, put the property on the market last year and has been moving employees from the Louisville campus to its main Colorado campus in Broomfield. State Rep. Paul Weissmann, D-Louisville, said he was thrilled the buildings would no longer sit vacant but was surprised the new tenant is ConocoPhillips. "All the rumor mills around here have been some high-tech company," he said. "Everybody thought either eBay or Yahoo or Microsoft." ConocoPhillips purchased the property using the name ST Acquisitions LLC. "I've been in this business for 36 years, and I've never had a secret kept that well," said Clark of the Metro Denver Economic Development Corp. "It absolutely flabbergasted me. I thought we were going to see a technology company or a financial-services company. This was such a delightful surprise."

*Staff writers Steve Raabe and Jennifer Brown contributed to this report. Margaret Jackson: 303-954-1473 or [mjackson@denverpost.com](mailto:mjackson@denverpost.com)*

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## What you need to know

**What will happen at the new facility?** Research into making liquid fuels from renewable sources such as crops and non-petroleum feedstocks. Among its current efforts: research into converting coal and petroleum coke to clean-burning hydrogen fuel; developing techniques to sequester carbon dioxide underground; and a program to use rendered animal fats for conversion into diesel fuel.

**When will it open?** ConocoPhillips plans to begin razing the existing buildings on the campus next year and expects to occupy its new facilities by 2012.

**How many people will it employ?** The company has not said how many people the campus will employ but has said thousands of employees will visit the site annually.

**Will there be jobs for local people?** ConocoPhillips spokesman Bill Tanner said the Louisville facility likely would be staffed with a combination of relocating workers and local hires, though he did not specify how many of either.

**Why was Louisville chosen?** The company cited the research and educational institutions in the area, —including the National Renewable Energy Laboratory, Colorado School of Mines, University of Colorado, Colorado State University and the University of Denver.

### **Firm's focus on liquid renewables**

*By Steve Raabe  
The Denver Post*

Until Wednesday's surprise announcement of its huge new corporate campus in Louisville, ConocoPhillips was best known to most Coloradoans as the company whose name is emblazoned on more gas stations than any other in the state. Now, the firm will start building an image as Colorado's largest corporate researcher of biofuels made from crops and nonpetroleum feedstocks.

Other major oil companies such as Shell and BP have begun embracing renewable-energy technologies such as wind and solar power to make electricity. Yet Houston-based ConocoPhillips, the nation's third-largest oil company, acquired the vacant 432-acre former StorageTek campus to focus on developing liquid fuels made from renewable sources. "It's an area of increasing importance for us," said ConocoPhillips spokesman Bill Tanner. "We want to look at alternative energy sources to offset greenhouse-gas emissions and to complement existing (petroleum) resources." The new facility, scheduled to open by 2012, will employ an undisclosed number of alternative-energy researchers. It also will serve as a corporate training center for ConocoPhillips. ConocoPhillips now employs about 1,300 research scientists at technology centers in Ponca City and Bartlesville, Okla. Tanner said the Louisville facility will serve as a "complement" to the existing centers, with a sharper focus on biofuels. ConocoPhillips' current research efforts include:

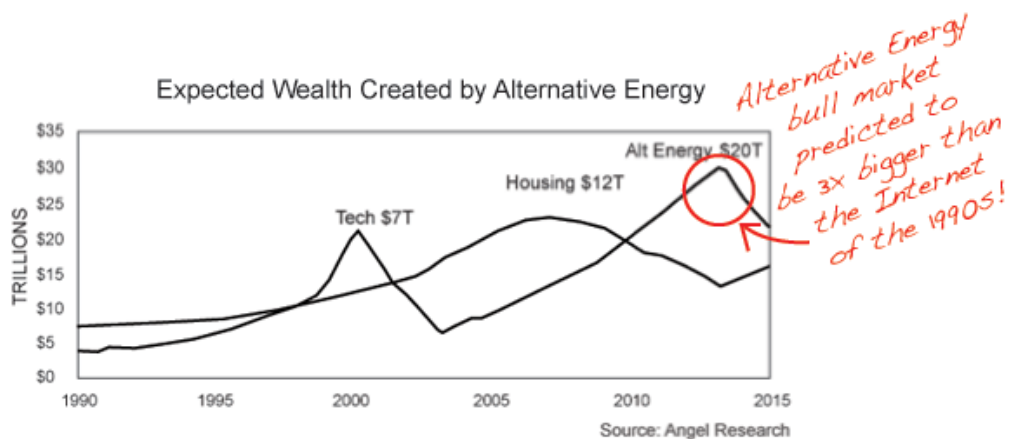
- A pilot program to use rendered animal fats for conversion into diesel fuel.
- Research on more efficient ways to produce ethanol from corn kernels, agricultural waste products and other organic sources.
- Developing techniques to sequester carbon dioxide underground, which would help reduce global-warming emissions while also helping to produce more oil from depleted wells.
- Research on converting coal and petroleum coke to clean-burning hydrogen fuel.

ConocoPhillips last year increased its alternative-fuels research budget to \$160 million from \$80 million in 2006. In Colorado, the company produces oil and natural gas primarily in La Plata County outside of Durango. It recently acquired land in western Colorado's Piceance Basin, where it plans to drill hundreds of gas wells in coming years. It also has acreage in the Piceance area that could one day be used for oil-shale production. Part of the Louisville facility's research is expected to target oil shale. ConocoPhillips supplies about 15 percent of Colorado's gasoline via a pipeline from a refinery in northern Texas. About 650 to 700 independently owned gas stations in Colorado sell Conoco-branded gas, making it the largest brand in the state, ahead of Shell and Valero. *Steve Raabe: 303-954-1948 or [sraabe@denverpost.com](mailto:sraabe@denverpost.com)*

**Dear Reader,**

Make no mistake... If you're not prepared to capitalize on the global ceiling of oil production, you'll miss out on a moneymaking opportunity seven times bigger than the Internet bull market of the 1990s. Even worse, if you're not prepared, your family could suffer, along with millions of others, if the nation were faced with a prolonged period of gas siphoning, job losses and food shortages.

As you read this, governments around the world are scrambling to develop other energy sources to replace dwindling oil supplies. The widely-followed and well-respected International Energy Agency (IEA) reported in 2006 that at least \$20 trillion has to be spent to meet surging energy demand. Others, like former White House advisor Matt Simmons, have recently said that between \$50 and \$100 trillion needs to be invested to update old and rusting oil & gas infrastructure. Renewable and alternative energy alone is expected to account for about \$20 trillion in wealth creation in the next 5 to 7 years.



When the dust settles, we could be looking at a market worth more than \$120 trillion! That's the equivalent of nearly 34 years of China's GDP! In other words, while a lot of money's going to be spent, for those forward-thinking investors, tons more is going to be made. And just in case you think those with a profit motive are the only ones talking about Peak Oil, let me reveal an alarming fact. Three years ago, in the same year we issued our prediction, the US Army commissioned a study called "Energy Trends and Their Implications for U.S. Army Installations."

Let us be clear about this - This is the most serious challenge the world has ever faced.

- "There is a huge risk that the oil price simply continues to escalate until it gets to some level (possibly \$250) when demand finally collapses because ordinary people can no longer afford to burn as much energy as they are burning now." - Adam Sieminski, Deutsche Bank's chief energy economist
- The nub of the world's most singular problem is to ensure we can sustain the 21st century without experiencing social chaos and ultimately a widespread geopolitical conflict or war. - Matthew Simmons

