2040 A World Without Oil: How We Became Oil Independent

By Jenna Ellis, Calvin Murr, and Rob Navarro

Technology and Nature EVST/EGRS 373

The Great Oil Crisis of 2020 drew attention to a number of problems that lie within the structure of society. When oil reserves were smaller than expected our systems collapsed completely. With the discovery of fossil fool and it's large reserves that populate pure oil reserves, the country erupted in panic because it was not prepared to live in a world without relying on oil. This collapse made the design of the suburbs no longer a viable option and forced mass migrations to the cities.

Back before the crisis, people did not hesitate to drive their own personal vehicles. These vehicles were designed to fit multiple people, but their seats were not often utilized, proving to be a highly inefficient way to use oil supplies. While there was public transportation, it was expensive, inconvenient, and slow. A personal vehicle could be used whenever citizens desired to travel, while public transportation had varying schedules. The structure of the suburbs especially required the owning of a personalize transportation device to access available public transportation.

Other problems with the structures of the suburbs required personal transportation vehicles as well. Home units had individual disposal of waste that would be picked up by trucks powered by oil and brought to landfills. They also often heated houses, and cooked using oil as well. Plastics were petroleum based and while renewable energy provided some relief from the lack of oil, it was expensive and required transferring from systems that we already set up to burn fossil fuels.

After the crisis, cities became the only practical places to live, because necessities were available within walking distance. This is not an attractive way of living for everyone, so since then, we have strived to reconstruct the suburbs in a way that allowed for citizens to live outside of the cities without the need for oil based transportation, housing, fuel, and plastics.

First scientists started exploring new efficient ways to enhance the public transportation system and to phase out the old highway system that encouraged travelers to use personal vehicles. Now in 2040 the development of the Hyper-Rail, a high speed train, seems to provide enough flexibility for families to leave the overcrowded cities and move into the new Xanadu communes. go-kars are also available to rent by citizens in as an alternative lightweight transportation vehicles to travel short distances that the train systems don't provide.

The Xanadu communes allowed for people to live outside of the cities in self sustaining communities. The self sustaining communities are consisting of about 100 units each and line the railway system to allow for easy access to the Hyper-rails. These new communities are entirely powered by a mixture of alternative fuels including solar, wind, syngas, and biofuel. They center around a communal recycling, and energy producing hub consisting of a newly developed micro reactor, where all of the individual units will derive their power, and processes the waste into bioplastics and fertilizers. Another innovation of the Xanadu projects is the implementation of small scale automated farming plots on the roof of each unit. The cultivating tilling and harvesting of these plots will allow tenants to engage in subsistence farming with very little effort, and make the unit all the more self reliant.

The Generation of Turmoil: Artifacts from the Great Oil Crisis of 2020.

The oil crises of the past 20 years have forced a paradigm shift in the way our energy grid operates. Engineers, policymakers and consumers alike were blindsided by the reality that we had depleted global oil reserves to extinction. The pervasive dependence on cheap and abundant fossil fuel reserves have necessitated a complete overhaul in the conventional wisdom of transportation, urban planning, agriculture, and industry. Urban centers across the country have been reeling from the mass influx of people, who can no longer afford to power their cars, buy their food, or even heat their houses as their suburban modes of living are starved of the oil which they depend on. The following documents serve to trace the impacts and outcomes of the past 20 years, in hopes to contextualize the seismic changes that American society has undergone. We begin with some background as to how we got to an oil independent 2040.

Back in 2016 the United States alone was producing 15124 thousand barrels of oil of its 40 billion barrels of oil in reserve. It was also ranked as having the fastest consumption rate of oil at about 19395 thousand barrels of oil a day, but has only the tenth largest oil reserve in the world. This system seemed to work for the United states for a while and could sustain America's greedy thirst for oil. However, that all changed with the discovery of "fossil fools". Below is a press release of the discovery from CNN:

> "On April 1, 2020 scientists made a discovery that changed the course of the world forever. Drilling in the Bakken oil field in North Dakota ceased on that day on account of the extraction of a substance that had the consistency of oil, but had a strange green color, instead of the usual black. For about a week the substance was tested and was found to be useless as a fuel source. The strange substance was labeled a "fossil fool" as a reference to the discovery of fool's gold during the gold rush. It was then discovered that the majority of what was thought to be the United States oil reserve of 40 billion barrels was actually only about 20 million barrels of real crude oil and the rest was the mistaken oil substance, fossil fool. The reason for the misprediction of the oil reserves was because of the flaws that came with seismology, the act of creating shock waves that pass underground and bounce back based on the composition of the earth. Because crude oil and fossil fool was so similar in make up, scientists had no way of distinguishing the two based on seismology."

Meanwhile prices at the gas pump were skyrocketing and the tragic announcement to the world about their findings prompted other countries to check their reserves for fossil fool. Unfortunately some findings were even more devastating to the reserves then the US reserves.

After this announcement the country went up in arms and all drilling, and all gas stations were temporarily put to an emergency halt until a plan could be made. There were riots and citizens went around siphoning gas from cars. After about a month of chaos and confusion a few pumps reopened but most went out of business. The ones that reopened had large signs saying, "EMERGENCY VEHICLES ONLY." It was apparent that this issue wasn't going away. Once people realized that this was a long term reality those living in rural areas used the last of their gasoline to get to more populated areas where food would be available. Over the coming weeks

there were lines down the streets to get bicycles. Supermarkets were packed with people trying to get the last of the non-local foods, until all super markets could offer was locally grown food from nearby farms or canned goods for the time being.

In 2025 government banned the production of plastic goods because of their petroleum base. People started saving their plastics like gold. They were recycled over and over again and were seen as a valuable commodity. Five-star restaurants would even sometimes serve drinks in original plastic bottles to show that they are the epitome of luxury.

It also became apparent that living in the suburbs was no longer a viable option for people because driving was no longer an option. The results of urban sprawl were now being put into reverse and the demand for city living sky rocketted. By 2026 practically all of the suburbs were abandoned and the cities were overcrowded with people. Once people started moving to the cities most adults would volunteer to take apart cars and suburban houses and bike them back into the city to construct buildings for people to live in, because resources for construction were no longer easy to get and cars were no longer used.

A lot of jobs were put on pause or just terminated all together, and people started to go back to more labor intensive jobs instead of service based jobs for a while. Because the suburbs were basically abandoned the areas around large cities became large community farms to try and help the city be self sufficient. Transportation of food was infrequent but occasionally trains would arrive with food from outside of the city and its farm. For at least the first 5 years after the discovery of fossil fool everyone in the cities were required to take a train at least one day of the week to the suburban farms. Tractors were only used in special cases, but for the most part the citizens had to do the work in order to have enough food to eat. There were others who worked at the farms full time in order to keep production high enough to provide food. Eventually high efficiency rooftop gardens were installed to help offset the lack of transportation for food.

Fertilizers were no longer produced because of their petroleum base, so farm animals and recycled food waste were the main source of fertilizers. Meat prices skyrocketed and CAFOs required too much energy to continue production. In order to produce food for an entire city it needed to be done in the most efficient ways possible meaning meat was a luxury now too, and was only really eaten on holidays.

The United States became almost entirely dependent on biofuels and other renewable energy sources by 2030 because it was the best way to produce electricity for the country. In order to do this they converted thousands of acres in each state into wind farms as well as biomass production. Now that everyone was living in confined areas there was much more land to instal the turbines.

Unfortunately, before we really started to enhance our productivity there were significant sacrifices of human comfort that had to be made. Before all the new alternative energy systems were put in, there had to be limits on electricity use to ensure enough for everyone. Heating was only available between mid december until mid march in order to conserve the limited energy from the wind farms. Also there were laws put in place in 2032 that there was to be a curfew at 10 O’clock. If you were to stay up past this time it would have to be by candle light.

While all this seems bleak, things started to look up in 2031. To work towards solutions for those who no longer wished to live in the suburbs, on March 10th 2031 congress apportioned funds to create "Federal Fossil Fuel Transition Committee" which granted federal subsidies for companies which are developing renewable technologies and energy systems which formerly were powered by fossil fuels. These technologies will then be incorporated into the new Xanadu project. In an effort to dilute the overpopulated cities this project will create self sustaining communal living

opportunities outside of the cities. Once the project was finished families would be invited to relocate to these new communal housing options.

The Daily Chronicle

06 DEC 2016

US CEASES FOOD AID PROGRAM AS STATE OF EMERGENCY DECLARED

By RODGER STONE

President Alex Jones has signed an executive order late yesterday afternoon which would halt all international aid, primarily in the form of food surpluses, to address the current food crisis which has resulted from the 2020 Oil Crisis. The food aid which once was sold to the developing world, will now be used to fight systemic food shortages which the lack of petro-fertilizers has caused. Mr. Jones was elected on a platform of neoliberal economic policy that he promised would bring "unprecedented prosperity" to the US. However, the executive order expands government food welfare programs according to a White House press release.

Reuters

International Moose Count Underway

By BOB O'BOBSTON

The UN-sponsored International Moose Census got off to a flying start today with hopes for an increase in the worldwide moose population compared to last year's disapointing figures. Among the traditional early reporters were Egypt, returning figures of six moose, a twenty percent increase on 2011's figures of five, and Uruguay whose moose population remains stable at eleven.

According to Robbie McRobson, head of the UN Moose Preservation Council, worldwide moose numbers are expected to grow markedly on last year due to the traditional moose strongholds of Canada and the United States, with the larger developing moose ecologies also poised to make gains. The largest percentagege increase in moose will likely come from China", says McRobson, The Chinese government has invested heavily in moose infrastructure over the past decade, and their committment to macrofauna is beginning to pay dividends". Since 2004 China has expanded moose pasture from 1.5% of arable land to nearly 3.648% and moose numbers are expected to rise to 60,000 making China a net moose exporter for the first time. This is good news for neighbouring Mongolia, a barren moose-wasteland whose inhabitents nonetheless have an insatiable desire for the creatures. The increase in Beijing-Ulanbataar trade is anticipated to relieve pressure on the relatively strained Russian suppliers, but increase Mongolia's imbalance of trade with its larger neighbour.

Historically the only competitor to China in the far eastern moose markets has been Singapore but the tiny island nation is set to report a net loss, expecting a decrease of more than five percent on last year's 50,000 moose counted. The head of Singapore's Agency for Agriculture, Jing-Feng Lau, explained to an incredulous Singaporean parliament yesterday that bad weather had contributed to this season's poor showing, most notably when a cargo of 150 moose were swept out into the Indian ocean in a monsoon.

Yet again the global demand for moose will be met largely by the US and Canada. The recession-hit States is taking comfort in its moose growth figures with gross production expected to break 700,000 and net exports to grow by 2%. The worldwide dominance of Canada shows no signs of abating though with this year's moose population expected to match last year's record figures of one hundred million billion.

Europe's rise as an international moose power will slow slightly this year as a response to the European Union's move towards standardising the European moose. Stringent quality controls are holding back the development of the eastern european populations compared to last year when they contributed significantly to europe's strong growth figures. Norway, which is not an EU member but has observer status, strengthed in numbers relative to the Euro area with numbers of Norweigian moose, known locally as elk" expected to rise for the tenth consecutive year, particularly thanks to a strong showing in the last quarter.

As moose season reaches its close, researchers world wide are turning to science in an attempt to boost next year's figures. NASA stunned the scientific community today with the announcment of their discovery that the moon is significantly smaller than previously believed. This conclusion, which is the conclusion of a ten-year collaborative project, will have profound implications for the moose community as the gravitational field is now known to be of the right strength to support moose in orbit.

According to John Johnson, head of the NASA Moon Sizing Experiment the first delivery of moose into low moon orbit could be achieved as early as the third quarter of next year. The technology to nurture moose in space is available now", he said, "all that is needed is political will".

Granny wins

The solutions to all these problems came with the the redevelopment of suburban neighborhoods and the implementation of a policy for population control. The number of people immigrating into all the major cities across the United States had become out of control. Moreover, population control was a major issue as well. The cities could only supply for so many people and only had so much space to give. In order to combat that issue, the government believed that the redevelopment of suburban neighborhoods would be a major asset in managing population dispersal. The government believed that if suburban neighborhoods' sources of energy could share those of the cities' than there may be an opportunity for people to move back into homes in suburban neighborhoods with power provided. The issue of cities being to clutter by the number of people would no longer be a problem. In addition to that, the new Hyper-Rail system that was being developed would allow people to travel between their suburban homes and the cities in order to retrieve food and resources for themselves. In terms of population control, by the year 2031, a child cap law, called The "Two Child Law," similar to that of China's, was created in order to slow down population growth. The scarcity of petroleum forced us to make the most of what little petroleum we had left. To maximize our level of efficiency, we had to figure out a way to impede our excessive and quick usage of our petroleum. As long as population continues to rise, so will the level of petroleum that would have to be used in order to satisfy everyone. By placing a limit on the number of children people can have, an opportunity may arise where supply can possibly meet the demand.

Another major shift that the Federal Fossil Fuel Transition Committee spearheaded was the development of biofuels. The loss of fossil fuels begat a new source of energy that could reliably meet the demand for energy sustainably. Biofuels showed promise as an alternative, and as such, between 2029 and 2035, the production of biofuel was increasing at an exponential rate. Although it will probably not be the permanent solution to our energy problem and will most likely serve, as a stopgap until an alternative form of energy has been created that is extremely sustainable. Rural

areas and agricultural lands that were abandoned were being used for growing different types of biomass. The two primary forms of biomass being grown were corn and soybean. The issue was economic stability. Due to the lack of petroleum, and the increase in dependency on alternative energy resources, farmers of these rural areas will be charging heavily for food they produce on agricultural land in order to offset the lack of revenue provided by the production of the biomass (such as corn and soybean) that will be used for fuel. This ultimately caused some citizen unrest because they did not want to pay too much for food. There is another drawback to this development of biofuels, which is similar to that of petroleum, efficiency. During this time span, society's production of fertilizer is 100% dependent on farm animals and food waste, because petroleum based fertilizer is no longer an option. The amount of fertilizer that would need to be produced in order to satiate both farmers' personal agricultural lands and the now currently abandoned agricultural lands would have to be immense. Moreover, the amount of time placed into growing these biomasses would be monumental. So what did the government decide to do? They decided a little civil unrest over food prices is trivial sacrifice and that the biofuel created would immediately be implemented into powering our train systems. The amount of energy homes in suburban neighborhoods provided those houses with light and to a very minimum extent, heat. This mass production of biofuel had made it possible for trains to run on approximately 65% of biofuel (the other 35% renewable energy such as wind and solar) by 2035. To put that in comparison, in 2008, a short railroad line in Eastern Washington ran a test with a train only using 25% biodiesel and 75% petrodiesel. We have come a long way. This ultimately allowed trains to make more frequent runs between suburban areas and cities, giving people the opportunity to get their weekly errands done. These runs done by the trains have replaced what used to be interstate highway systems.

Now in 2040 people live dramatically different lives than they did back in 2016. We have obviously come a long way without oil dependence and our old systems and people live now in very different ways. Published on December 9, 2032, Robert Navarro submitted an account of his life in his OP-ED in the New York Times.

"On the occasion of the opening of the new and sorely needed Hyper-Rail stop in Easton, we think it fitting to take stock of the sweeping changes which have transformed the Lehigh Valley over the past 2 decades. The oil which once flowed abundantly from these hills, and from reserves around the world has ceased to a trickle, starving the suburban dream once the vogue in the Lehigh of their life blood. The mass confluence of suburban expats which Philidelphia and New York City experienced in the early days of the oil crisis, has been tempered by developments who have contrived a new, less thirsty, alternative to the cramped city centers. The Xanadu model, the product of Silicon Valley think tanks, will hopefully breathe life back into the bleak, post oil shock the Lehigh Valley. The abandoned subdivisions which haunt the landscape outside of easton, will hopefully now be razed and recycled to make way for new model homes which can be affordably lived in.

This new model of the subdivision is one equally based in self-reliance, and conspicuous consumption. These subterranean Xanadu's, use natural insulation to spare

families the crippling cost of heating in the winter and cooling in the summer. On their roofs lie high yield roof gardens, and provide families

relief from the notoriously high food prices outside cities. The boom in plastic consumer goods, which marked the suburban revolution of a century ago, is replaced now by the recent boom in bio-plastics, processed from refuse. Each unit is complete with solar panels, and a windmill, which charge a central battery that powers the house. At the center of the subdivision, lies the community farm, power source, and recycler unit which converts the family refuse into precious fertilizer and bio-plastics. The new economy spec fly weight “go-kar” which has become increasingly popular amongst more affluent Xanadus, will once again connect the suburban family to the Lehigh Valley environs, yet energy scarcity, will continue to curtail the unrestrained travel that came with oil abundance. The final link in this chain is the opening of the Hyper-Rail , 5 minutes bike ride from the entrance to the subdivision, and Philadelphia and New York's, Hyper-hubs, are only 20 minutes ride from there. This link to the cities, where many have been driven by the alarming cost of living in the suburbs,

As a member of the local press, I was invited to live in the a prototype Xanadu subdivision just off the old Interstate south of easton, to get a sense of what future residents would experience when the 6 others in the area are officially opened next month. Having grown accustomed to the spartan austerity which has characterized life in the Lehigh Valley of late, I was shocked by the creature comforts afforded by my 1000 sq ft “family” unit. Skylight panels which mirror the weather conditions outside the unit, give an impression of natural lighting which one would expect to be lacking in the windowless bunker. All of the rooms were finished in a hermetic white bioplastic, adding to the ethereal lighting, but I was told that the facility at the center of the subdivision, was capable of producing modular panels of bioplastic in an almost infinite range of color and texture. At the center of the living room, (where in my childhood home would have stood a fireplace), was a 5 foot

screen which displayed all of the energy consumption metrics, the state of charge of the unit's battery, and the energy production figures from the solar panel and wind mill. This feature was a source of instant amusement, as I tracked the the monthly production figures, watching them spike on the particularly windy, or sunny of the past 30 days. This central controller also could be used to help maximize the garden plot on the roof, as it has information about tens of thousands of plant varieties and the care and conditions each one needs. Using weather data and data from the seed database, farming is as easy as a few taps on a screen (a farm drone is an optional extra which will automate all of the work which the yeoman farmers of 100 years ago once occupied their lives with).

This repository will serve as source materials for our book we are writing, in preparation for the comprehensive history of petroleum, entitled "Oil!: From Black Gold to Black Death". In addition, I will begin teaching an undergraduate seminar on Perceptions of Oil, which will use this material to trace the changes in the way in which petroleum was perceived before during and after the crisis."

Since then we have recovered an actually diary entry from a resident currently living within the Xanadus now that they are fully populated. Here, on November 15, 2040, Jenna Ellis gives insight into a typical day living outside of the city in a Xanadu commune herself:

This morning I put some oatmeal in the zapper and I sucked down my moffee (mock coffee) mix on the roof top. The garden seemed to be in decent shape, and I found a perfectly ripe apple to look forward to eating later on for lunch. It was nice to see some of the newer small trees we just planted in the back starting to produce. The rooftop garden was looking even better this month then last and I have recently enjoy sitting up there and looking out over all the flourishing rooftops, especially this time of year. There is something mesmerizing and peaceful about the hundreds of spiralling propellers across the horizon harnessing energy for tonight.

When I finished my breakfast I hopped onto my bicycle and headed for the train station only a few blocks away. I snapped my bicycle into my parking station and proceed to walk onto the train. Once seated I prepared to brace myself for the sudden jolt that comes with the initial pick up. The take off always startles me but once it has hit optimal speed I am no longer as tense. The train is quiet in the morning and all I can hear is the gentle hum of the engine and a young couple giggling in the back. The horizon changes quickly when approaching the city, changing from a brilliant green to a shiny gray in a matter of twenty minutes.

Once we arrived in the Mother Dome I decided to do some shopping because I was in a little bit early and I knew I wouldn't have much time later in the week, because I have a few big articles coming up. I made my way to the dairy annex first to pick up some cheese for mid day sandwiches and some milk for my moffee. There was a problem when I scanned my hand though, for some reason I had no more milk credits for the month. I hoped my husband had picked up some on her way home because I knew the calving season was below optimal levels and milk was not always available. Plus I would dread another week of bitter black moffee. Leaving with only a block of cheese I made my way to try and flag down a one person taxi. They had just cut them number of taxis

down again in the city and so it was almost impossible to find an empty one during rush hour. Once inside I scanned my hand using one of my two taxi credits for the day.

Work wasn't particularly exciting, although another one of my articles was picked to be on the main screen this morning which did give me the small pick me up I needed. On my way home I grabbed a few more things from the grain annex of the Dome including some crackers for my cheese. It was fairly crowded because it was rush hour, which is why I was glad to not have to be in the dairy annex after work which tends to be extra crowded these days.

Coming home to my husband and two children was a nice surprise. We made salad with some of the greens from the roof because they have been growing like weeds recently! It is like you can't get them to stop. The kids were especially excited to have this week's new block of cheese, and they ate so much that they passed out early. So my husband and I tucked them into their thermal units and decided to enjoyed a packet of fermented grapes even though it was past curfew. We reminisced about our days by the glow of the candles and things felt normal. I was more content than ever.

Infowars.com also gave insight into how these projects have influenced society here in 2040. Kevin Murr submitted this article in on April 2nd, 2040:

"In the wake of the cycles of panic and severe economic depression which followed this realization, great work is now being done to transition into the post oil socio-technical landscape. In urbanized areas like Los Angeles, where public transportation was too thinly spread and oil dependant to pick up the slack when millions were unable to afford to fill their cars with gas, municipal leaders scrambled for ad hoc solutions, such as electric powered streetcars on nearly deserted streets. Car companies began to shrink the scale of their offerings, offering what is now known as 'go kars', tipping the scales at less than 650 kg, and running on battery electric power. Eastern cities, with more established and extensive public transportation systems were at an advantage, but still faced great housing shortages in response to the crisis. Short term temporary houses, formed from recycled shipping containers, were erected around the outskirts of cities to house provincial migrants, but a more permanent solution is the Gordian knot which most urban planners and engineers have been tasked to untangle.

Silicon Valley has responded to the crises with revolutionary overhauls in mass transportation grids. The Hyper-rail project, is at the center of this revolution. It consists of pods which run in huge vacuum tubes, suspended above the ground by magnetic fields, can achieve maximum operating speeds of 700 miles per hour, at a net energy efficiency of 90% due to the absence of friction and drag. While it has operated between Los Angeles and San Francisco for many years now, the government has now moved to retrofit the Hyper-Rail l system to all of the interstates which now lay in complete disuse, as a means to relieve the systemic housing shortages urban areas are now facing.

Underwriting the Hyper-rail project, is the new solar energy harvesters, which are increasingly replacing the petroleum and coal based power grid. These harvesters, can be as thin as a few millimeters and are completely transparent, yet can convert 85% of incident solar radiation into electrical power, a 10-fold increase in efficiency since 2020. Their implementation has not become extensive enough to completely replace fossil fuels, as they are prohibitively expensive for the average consumer as they are derived from petro-plastics which, pound for pound, are as dear as gold. However, their thin and transparent construction allows them to be retrofitted over any surface which is exposed to the sun, making the large and land intensive solar farms of the past obsolete. Indeed, the petroleum plastic shortage, has wreaked havoc on the lives of consumers, which has directed scientists and researchers to develop new bio plastics. While until recently, these plastics simply recycled petroplastics and

combined them with organic compounds to decrease the net consumption of petro-plastics, researchers at Stanford University, have developed a range of organic starch-based materials, which mimic the range of properties offered by traditional thermoplastics, yet can be dissolved by nitrogen solutions to be used as fertilizer, or re-processed into other shapes types of bioplastics. Composting has now taken on huge importance, now that petroleum based fertilizers have been priced into extinction, and scientists at UC Davis have been hugely successful developing a process to convert human biological waste into usable and nutrient rich fertilizer to replace traditional fertilizers. The implementation of this, will be one of the key ways in which astronomical food costs will be combatted.

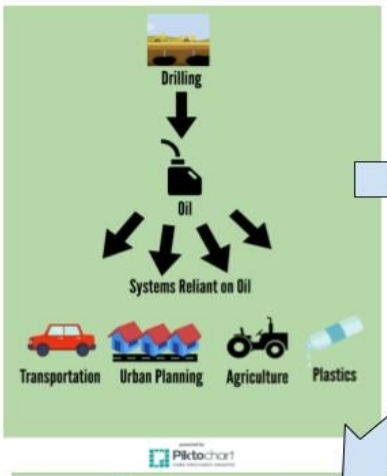
These developments, have spurred some technocrats and real estate developers to explore the possibility of alternative modes of suburban living, based around the panoply post-oil systems. Google, 5 years ago, began work on its "Xanadu" project, a sustainable modular subdivision, which will allow people to live along the proposed network of Hyper-rail lines and stations. Each Xanadu development, will consist of about 100 units, and center around a communal recycling, and energy producing hub, where all of the individual units will derive their power, and processes the waste and refuse into bioplastics and fertilizer. The centerpiece of these communal units, is the newly developed micro-reactors, small scale nuclear fission reactors, capable of producing enough power to make the subdivision entirely energy independent for 2 years without maintenance. The reactors are complemented by a coalition of renewable sources, chiefly wind and solar collectors, which charge the tiny 'go-kars' which provide residents a quick link between the Hyper-rail terminal and the Xanadu communes. Another innovation of the Xanadu communes is the possibility for small scale automated farming plots on the roof of each Xanadu units. The cultivating tilling and harvesting of these plots, as well as the fertilizer which facilitates the growth of plants, will allow tenants to engage in subsistence farming with very little effort, and make the unit all the more self reliant.

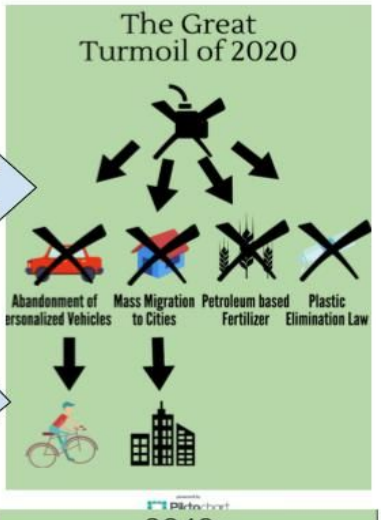
As an urban planner for the city of New York, the implications of Xanadu developments and the subsidiary technological included in them will provide the stability and energy security which millions of americans now lack. It is my hope, that both local, state and federal governments work in harmony with private enterprises to modernize our transportation and energy grids. Liberating Americans from the servitude of energy austerity will usher in a new era in American prosperity, fostering sustainable job growth, and will perhaps turn the hardship of the current economic landscape into a distant memory."

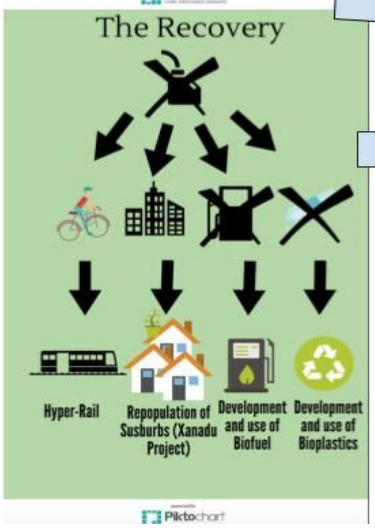
All of these accounts perfectly exemplify what life is like in 2040 and in comparison with 2016, it seems as though we have developed viable solutions to living without oil. Back in 2016, we were a society heavily reliant on taking resources from the earth in order for us to thrive. The

Xanadu Commune has been implemented and these communities in suburbs are now self-sufficient, which, thankfully has prevented us from reverting back to a culture where people depend on natural resources to power our lives. The Xanadu Commune influences citizens in our communities to be more in tune with our environments, buy from local food markets, and spend more time outdoors on our roof gardens which ultimately reveals to us the patterns in our natural environments. Furthermore, we are no longer taking the environment's resources for granted and mediating nature in a positive manner so humans benefit without harming the environment. The use of petroleum is obsolete and society has shifted to 100% use of renewable energy. Unlike 2016, the personalized vehicles we used to know and love no longer exist in the world. We've adapted to a society where the dominant form of personal transportation are rentable go-kars, that run on electricity converted from 100% biodiesel. We're currently keeping the Hyper-Rail system as our form of long distance transportation, because it saves an immense amount of resources compared to the planes and trains we used to use back in 2016. We placed so much instrumental value on petroleum that we lost the opportunity to have our own forms of personal transportation. We abused our access to oil to a point where it was integrated so deeply into our systems, that once it was gone our society needed complete remodeling. Despite it seeming like a crisis back in 2020, the near complete loss of petroleum was in fact a blessing in disguise. Now in 2040, carbon emissions are currently at an all-time low, we are in the midst of a renewable energy revolution. On the whole, the crises that arose after 2020 forced people to become far more aware of the ways in which technological systems are interconnected. 2020 was a rude awakening, the tragic inevitable conclusion to our destructive addiction to fossil fuels. In its aftermath, policy-makers, engineers, industrialists and most importantly, citizens have been forced to take a more holistic and circumspect approach to developing and implementing technological systems. We've innovated eco socio-technical systems that can coexist in harmony with nature and have developed a mutualistic relationship with the environment that we never had in 2016.

Our next step is to ensure that this green and sustainable society stays intact. We must ensure that our cities populations' stay at a stable number and that food production stays consistent so every citizen, in both suburban neighborhoods and cities, are well provided for. With the Xanadu Project and the Hyper-Rail system, citizens have learned to live comfortably in a world without oil. They are able to travel and live with similar, if not better, welfare than before the Great Turmoil.


Drilling
Oil
Systems Reliant on Oil
Transportation
Urban Planning
Agriculture
Plastics
Piktochart


The Great Turmoil of 2020
Abandonment of ersonalized Vehicles
Mass Migration to Cities
Petroleum based Fertilizer
Plastic Elimination Law
Piktochart


The Recovery
Hyper-Rail
Repopulation of Susburbs (Xanadu Project)
Development and use of Biofuel
Development and use of Bioplastics
Piktochart


2040
Self Sustaining Community Living Includes:
Waste Recycling Center
Rooftop Farming
Micro Reactors
Bioplastic Production Center
Transporation Options:
Hyper-Rail System
Small Scale Go-Kar rentals
Bicycles
Walking
All Powered by:
Biofuels/ Syngas
Wind Power
Solar Power
Piktochart


2016
2040
GASOLINE
Biofuel
Highways
Railways
Personal Vehicles
Public Transportation
Single Household
Self Sustaining Community
Petroleum based Platics
Bioplastics
Piktochart

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