

Summary of Brainstorming and Discussion

Common Ground Alliance Forum

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Workgroup: Adirondack Region Responses to Climate Change

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This workgroup started by reviewing the results of the ADK Futures new workshop series on regional responses to climate change. With the group we first reviewed the six scenarios for how the world responds to the threat of disruptive climate change over the next 25 years. The six scenarios were:

- G1: Governments Get in Gear: the top-down international process of international agreements to curb emissions by putting a price on greenhouse gas emissions is successful.
- G2: Bottom-Up Progress: a patchwork of incentives, experiments and regulation by cities, regions, states and smaller nations pave the way for broader adoption of clean energy and harden local infrastructure.
- G3: Private Sector Leads: multinationals take the threat seriously and find opportunities to leverage innovation, financial markets and global distribution to roll out clean energy and adaptation solutions.
- G4: Take it to the Streets: global protests against fossil fuel interests succeed in pressuring governments to act.
- G5: The Oblique Path to Progress: more tangible problems like deadly air pollution, poverty and invasive species are tackled and emissions reduction is a by-product.
- G6: Welcome to the Anthropocene: efforts to reduce emissions are insufficient and CO₂ concentrations exceed 600ppm and are still rising.

Full text of these scenarios can be found at the end of this summary.

We next asked the group to rank order these scenarios in terms of their probability of happening over the next 25 years. Here are the results which are consistent with previous groups:

| Probability | | |
|-------------|-------|----|
| 1 | G2 | 73 |
| 2 | G5 | 63 |
| 3 | G3 G6 | 51 |
| 4 | | |
| 5 | G4 | 49 |
| 6 | G1 | 13 |

Bottom Up and Oblique approaches coupled with the private sector are expected but not the top-down international effort. The relatively high probability of failure (F) is alarming.

Next we discussed the six visions for how the Adirondack Region responds in the next 25 years (full of text of which are at the end of this summary). These are written as snapshots of conditions in 2040:

- A: Minimize our Carbon Footprint: the region is a model of low carbon footprint rural living.
- B: Community Resilience: the region prioritizes investments to harden its infrastructure and strengthen its communities in anticipation of bad climate change.
- C: Hyper-Green Human Refuge: the region in general benefits from a warmer climate and experiences in migration from areas seriously impacted.
- D: Rise Up and Demand Change: the region’s schools, scientists, philanthropists and environmentalists lend their voices to calls for national and international action.
- E: Pragmatic and Measured: we don’t overreact or over invest. We let the private sector deliver cost effective solutions.
- F: Regional Tipping Point: repeated extreme weather events devastate the forest and our communities and there is significant depopulation as people flee to cities.

We then asked the group to rank order these endstates in terms of their desirability overall and their attainability by our region. Here are the results:

Desirability Attainability

| | | | | |
|---|---|----|---|----|
| 1 | A | 84 | B | 69 |
| 2 | C | 61 | E | 67 |
| 3 | B | 56 | C | 61 |
| 4 | E | 53 | A | 53 |
| 5 | D | 37 | D | 34 |
| 6 | F | 9 | F | 16 |

These results are broadly in line with previous groups. A (Minimize Carbon Footprint) is most desirable but it is difficult (but doable). E is the wait and see approach which is easy but not really desirable. B we have to do, especially given our belief that the world response will be insufficient to prevent destructive future climate.

The full reports on previous workshops can be found at www.ADKfutures.org

Next we brainstormed answers to three questions. The first was:

How can our efforts move the needle on climate change? What is the best contribution we can make?

There were a variety of ideas:

- Protect the forest as a healthy carbon store. Continue the important work on controlling invasive species. Use management practices that increase forest health, density and carbon storage.
- Adopt agricultural practices that sequester carbon in the soil
- Do great science on impacts and communicate it widely and well
- Use our philanthropy to build momentum for collective action
- Be a model for other rural communities
- Be a leader in clean energy. Rethink our approach to renewables. Deploy more wind and solar arrays. Do biomass-based district heating solutions. Set large goals and map our progress toward them on a regular basis.
- Use wood for durable goods: construction, furniture, etc. This is carbon sequestration. With a warmer climate we will have more hardwoods like oaks which should be used for high value purposes. Note that our forests never produce one thing, like saw logs – they produce a full array of material from high value to low value.
- Adopt stretch building energy codes that promote buildings that are constructed and remodeled to a higher efficiency level than “worst you can do” under baseline codes. Build smaller more energy efficient houses. (or promote by making the building of “McMansions” more difficult by code, or make them meet more stringent efficiency standards, vis-à-vis Larry Master’s LEEDS Platinum home)

- Develop net zero multifamily housing in hamlets especially for our aging population
- Promote comprehensive energy efficiency for existing buildings and facilities, from the ground up through communities.
- Pilot microgrid technology coupled with distributed generation
- Provide migration corridors for wildlife

The second question posed was:

What do we do if we expect the worst?

We brainstormed these ideas:

- Harden our infrastructure: communications, internet, power, roads, bridges, culverts, etc.
- Migrate hamlet development away from flood plains
- Employ green infrastructure adaptation
- Strengthen our community capacity and support organizations
- Proactively maintain the attractiveness and viability of our communities
- Use the North Country culture of self-reliance to promote future resilience
- Do holistic planning at the community level. Develop a vision for a climate-proof community that is appealing and attractive to visitors, is ready to respond to events and threats.
- Have regional organizations help to build capacity at the community level
- Promote the Regional Sustainability Plan to adoption at community levels, or incorporation of elements in local plans.

The third question was:

How do we build momentum for action here and nationally, internationally?

We brainstormed these ideas:

- Make our proactive response to the threats of climate change a message in our tourism promotion and local signage. Enlist ROOST and ORDA to get this message out. Make sustainable tourism real in the Adirondacks. Adopt standards for sustainability in the hospitality industry. Use I Love NY to get these messages out about the region. Use roadside kiosks and welcome centers.
- Use all the tools of the digital age and social media to get the messages out about the threat and our responses
- Use the arts and humanities to tell the story and educate

Next we turned our attention to the summary questions that we would present to the plenary session.

1. Define the primary Challenge.

National and global responses have been insufficient and do not appear to be able to make the hard policy changes required to prevent future destructive climate change. Also we as a region are dependent on outside resources to implement the responses we want to make. We are only likely to make big changes if there are economic advantages. Our elected officials need to talk with Washington about the threats to our region because of inaction on climate change policy. National policies to promote clean energy adoption would be top priority.

2. What are 1 or 2 actionable opportunities to address the challenge? As discussed above there are many good contributions we can make. We focused on two opportunities:

- a. Do community visioning to create a holistic response to these issues. The group had a vision that we would use philanthropic funding to do the first three of these community climate-proof visions. These would be holistic visions of the transition to clean energy, of resilience and of economic development. We would challenge communities to compete for the opportunity to participate in one of these first three efforts. There would be funding lined up for these communities to start implementing their vision as well. These become models for other towns in the region and elsewhere. Ideally, we would do three very different types of communities in terms of size and economic strength. Part of these plans should include the opportunity for locals to invest in these energy projects that give a return on investment.
- b. Make a major push with the help of ROOST and I Love NY to develop a vision for the region's tourism providers of being leaders in climate-smart and net-zero thinking. Develop messaging that educates visitors and reinforces our green brand.

3. What is our fantasy solution?

That we really are the model of the greenest rural economy to the point that we can *demonstrate overall a net negative emissions profile* in the future. We decrease our use of fossil fuels drastically and at the same time increase the carbon storage of our forests and agricultural lands and use wood for durable products. Our sustainable approach to tourism is real and visible. We tell our story to visitors and in national and international circles. Bright young people are drawn back to the region to live this sustainable life.

Full Text of the World Response Scenarios

G1: Governments Get in Gear

By 2020 almost all leaders of the major emitting nations took the threat of severe climate change seriously and embraced the need to cap emissions as quickly as possible. They finally initiated serious action to pare emissions by 80% of 2005 levels by 2040. The deniers and advocates of dirty energy were increasingly demonized. In most of the world there was no ideological battle. The science is clear and you would be a fool to ignore it. The US and China led and much of the rest of the world quickly followed.

The developed nations fear the disruption of the geopolitical order that climate change portends. Already, climate-driven migrations are an increasingly serious concern. Since conversion of the world's energy infrastructure will take decades, priority is put on steps that make the biggest difference soonest: ending coal use, stopping all methane leaks, drastically lowering black soot levels and halting deforestation.

The key step is forcing those who emit GHGs to pay in proportion to the amount released. Most of the major emitting nations agree to a set of tariffs that penalize countries that don't put a price on GHG pollution, instituting a "climate club". This effectively stops freeloaders and makes clean energy the lower cost option. The revenue from emission charges is used to fund energy and transportation innovations as well as recompense those most hurt by the changes. With assistance from the leaders, developing nations leapfrog into clean energy infrastructure the same way they leapfrogged into mobile communications networks.

G2: Bottom Up Progress

Although lots of national commitments are made, they were rarely met, and often rescinded by succeeding administrations in the US and elsewhere. The Paris accords are rarely followed and the IPCC process has become largely irrelevant. Instead, a diverse set of local and regional incentives, regulations and taxes sprout up throughout the world in line with local support, and evolve with experience. The impacts and implications of climate change are felt differently in each locale, leading to different priorities and motivations. Almost all adaptation is local or regional. Rebuilding more resilient infrastructure after storms is just common sense. Big coastal cities are major laboratories of change and innovation.

After some regions demonstrate that you can make major changes in energy infrastructure, and save money in the process, it is easier for others to get on board. In reality, for a long time climate change work was actually being done, but largely under the radar. When opinion rallies sufficiently to make it OK to come out in the open, we find that a lot of progress has already been made and planning for a changing climate and clean energy is integrated into most processes of government and the private sector. The early adopters of clean energy ramp up volume and foster steady innovations that make it cost effective for the majority to adopt later on. Progress isn't universal, but it is accelerating and the necessary pieces to a full solution are in place and understood by 2040. Pressure on world leaders to implement consistent and comprehensive policies is finally compelling. Many fear we have let things go too far, but we have finally turned the corner.

G3: Private Sector Leads

Early on, it was the transnational corporations that took the risks of unfettered GHG emissions most seriously. The implications of the science were clear and they started factoring expected changes into their strategic plans. Once they realized the climate problem wasn't going away, businesses worked to get out front and exploit the enormous opportunities presented by the extraordinary changes needed in energy production, agriculture, and infrastructure, etc., not to mention all the work needed to clean up after the seemingly endless storms, floods, fires, etc. Water is a huge investment area with desalination being used more widely and efforts to reduce water needs of agriculture in full gear.

Having learned from other disruptive changes like the Internet, they ignore this at the peril of their business going away or competitors taking the lion's share of the profits. There will be some winners and a lot of losers because of climate change. Business strategy and planning are increasingly about getting on the winning side of this. In sector after sector (insurance, large scale project engineering, agriculture, and defense) climate risks and opportunities are put front and center. Momentum builds as the potential for new jobs and cheaper, better technologies are increasingly evident. Who could be against lowering their energy costs and curbing air pollution along the way? The auto industry embraced the challenge of step-function increases in fuel efficiency, surpassing the 56mpg CAFE standards of 2025. The airline industry also responded with fuel efficiency improvements and emissions reductions in response to targets set internationally. The corporate world strategizes to save the planet and make a fortune too.

NGOs offer prizes for innovative solutions (e.g., in transportation and fresh water production) as had been done with fighting malaria and jump starting private space travel. Zero emissions is as much of a business mantra as zero defects. Global capital markets coupled with state-of-the-art marketing programs enable the rollout of clean energy at scale. Even the fossil fuel companies eventually see the writing on the wall and diversify into clean energy and new markets for water exploration. Oil doesn't go away, but it is burned with emissions controls in most situations. Large numbers of companies and organizations use the strength, depth, and power of the marketplace to solve problems at scale. Leading organizations adopt internal carbon pricing to put them a step ahead of competitors. Facing a patchwork of local mechanisms for carbon pricing, global business leaders demand a consistent systems that removes the uncertainty in the payback on clean energy and efficiency investments.

G4: Taking It to the Streets

Throughout 2020's policy makers in the US remained oblivious and seemingly in thrall to the fossil fuel companies and radio talk shows, but the younger generation saw itself facing increasing climate deterioration. Young people globally were seeing through the hypocrisy, greed and token gestures. Even by 2030 no major fossil subsidy has yet been cut. Oil and gas exploration was still moving at full speed while clean energy subsidies were reduced. Peaceful marches by 350.org and the like had not moved the needle. Disinformation and fear mongering still prevented most legislatures from enacting major changes in energy policy.

Just like the anti-war movement in the late 60s and the nuclear freeze movement of the '80s, colleges and universities around the world become centers of student and teacher radicalization. Students rise up in large numbers - there are angry marches, sit-ins, and violence as well as sophisticated cyberhacking. "Take Back Our Planet" is the common cry. Around the world university classes are suspended as professors join in demanding meaningful climate action. Cyber-sleuthing on perceived villains, like oil companies and their back pocket politicians, reveal the depth of their cynical manipulations and callous disregard for the future of the planet. Students succeed in radicalizing their parents and older siblings. Increasingly, the middle class, stung by extreme weather, gets fed up as well and join the youngsters in their protests. Aging hippies from the 60s reawaken their activism and teach their tricks to the next generation. A new climate flag becomes popular, like the peace sign of the 60s.

The divest fossil fuel stocks movement goes global and is increasingly used as a way to shame companies and institutions that are not lining up with the movement. Eventually, the protests become strong enough to displace entrenched interests. Bill McKibben finally is seen smiling every once in a while as legislatures around the world are now much more committed to serious climate action.

G5: The Oblique Path to Progress

Humans and governments are not wired to deal with long-term, abstract problems like climate change. By 2020 climate change fatigue had set in in the environmental community with some backlash against it sucking up all the oxygen in any environmental discussion. Instead the problem is recast as solving other more immediate and tangible problems like deadly air quality in India and China, or protecting tropical forest ecosystems.

Even in 2040, climate change is not seen as either the number one social or environmental problem, but it is a mainstream factor in almost all planning and policy. There are no longer any climate change task forces or special climate offices. Investing to reduce poverty, improve education and healthcare, and raise standards of living in the developing world gives them the ability to adopt clean energy infrastructure and build new resilient public works, while causing birth rates to drop fast. Many emerging countries are able to leapfrog in technology and practices to the latest and cleanest.

Policy makers and environmental NGOs see habitat destruction and the global spread of invasive species as more damaging to the environment than climate change at this point. Water issues, floods and droughts, are the most compelling and the public is highly motivated to deal with them. Reductions in GHG emissions are a side-effect rather than the justification for most efforts. Converting to clean energy is seen as a cost saver, a public health improvement and a reduction in the adverse side-effects of fossil fuel extraction.

The focus is on “no regrets” investments in resilience that are cost effective now and make sense under a variety of possible future climate scenarios. Once the low hanging fruit is addressed, technology and science will have advanced sufficiently to make the next few steps clear. The really hard problems are put off rather than being put front and center in a way that sets up big battles between powerful competing interests. This is not the fastest route to mitigation, but it’s the most realistic.

G6: Welcome to the Anthropocene

The global response never got in gear and even by 2040 it is completely insufficient. The developing world (especially India, Brazil, and Indonesia) makes little progress in reducing emissions, convinced they have no choice besides exploiting cheap fossil fuels to lift their people out of poverty. Entrenched interests effectively thwart high-level policy changes until devastating impacts are clearly unavoidable. It proves impossible to drastically cut emissions from fossil fuels given the complexity, vast scale and sunk costs of the existing energy system. Improvements are taking decades in most of the world even when the goal is clear and the incentives aligned, neither of which is usually the case. What becomes really detrimental to progress is the global glut of fossil fuels that keeps them really inexpensive for a long period of time.

By 2040, it is clear that global emissions will not be 80% lower than 2005 levels by 2050, not even close. Inertia will carry us well past 600ppm of CO². The bad effects of this are beginning to become obvious: extreme weather events, extended droughts, very large fires, new pandemics, etc. Many major cities have severe water outages. Growing numbers of climate refugees leave the coasts and the subtropics. Measurements show that several positive feedback loops are kicking in, such as the melting of the permafrost and the near complete elimination of arctic sea ice in summers.

Available resources focus on preparing for the worst and rebuilding after disasters rather than serious reductions in emissions. More and more pundits embrace the reality of the situation: no part of the earth is untouched and the classic conservation goal of preservation is simply no longer realistic.

Progress in biotech has produced effectively reengineered crops and herds for human consumption. Science will blunt the most serious impacts on humans of climate change. A number of nations are testing geoengineering technologies, which deliver a big relief from temperature rise for a relatively small investment. It's so cheap, it's hard to see that someone won't try it as conditions get really bad.

Full Text of the Adirondack Regional Response Endstates

2040 A: Minimize Our Carbon Footprint

Summary: The region is a model of low carbon footprint rural living in harmony with nature.

Context: Significant global progress has been made in reducing emissions and making clean energy affordable at scale. People in most parts of the world are changing how and where they live to lower their carbon footprint, convinced of the risk of disruptive climate change. A variety of incentives, regulations and innovations make clean energy an economically sensible choice. The auto industry exceeded the EPA CAFE standards. The airline industry reduced emissions significantly as well. Climate change is no longer a political third rail, in fact it is common ground.

Impacts: Clean energy solutions are often the low cost options. Our growing season is extended. Extreme weather hurt smaller towns more than the larger, more resilient ones. People are much more aware of their energy and water usage so conservation is widely practiced, just as recycling became mainstream earlier.

Responses: For economic, environmental and ethical reasons, the region does its part, lowering its emissions significantly. Although our small numbers mean that the impact on the atmosphere is small, our impact on political and public opinion is large. We did not ignore this. We were leaders in communicating the threat and articulating paths forward to the population at large, including farmers, hunters and tourists. There is broad support throughout the region for lowering emissions and preparing for all sorts of extreme and sometimes destructive weather. Local solutions are often creative and save money.

We broadly adopted clean energy (solar, wind, biomass, geothermal). Solar farms were widely implemented. We are a leader in demonstrating the effectiveness of NY's Clean Energy strategy. Thermal heat is largely a mixture of biomass and electric. Widespread deployment of charging stations helped with adoption of electric cars and attracted visitors with electric cars. Aesthetic issues no longer derail well thought out and designed clean energy projects, which are seen as essential to saving the landscape we love. The visibility of green energy projects are badges of honor, not blights on the landscape, and teaching opportunities for tourists. We monitor our progress in reducing emissions and focus on the next more difficult area of reduction.

The structure of our communities is beginning to change. We can no longer live so spread out. Resilience and economic development investments are concentrated in the larger hamlets and villages. The smaller towns are fading. More people live and work in the same community or telecommute. Using smart growth and revitalization grants, communities have become more pedestrian, bike and elder friendly. District heating systems are more common. Hamlets and villages attract people who want to live the clean green lifestyle. Homes in hamlets sell faster

than isolated remote homes which now take a long time to sell even at depressed prices. The total population does not change much.

We also work to increase the carbon storage of the private lands through optimal forestry. Priority one is forest health. Woodlot owners see their forest differently, as their personal contribution to carbon storage. Marginal vacant farm lands are planted in trees. Our tourism infrastructure is greener than ever and focused on communicating the value of nature. Farmers proactively adapted to the changing climate, planting new crops and increasing yields, using low-till and biochar in their operations.

2040 B: Community Resilience

Summary: Obvious signs of damaging climate change coupled with delayed and insufficient global response lead the region to prioritize investments in resilience.

Context: More than half the countries of the world, including the US, missed their 2040 emissions reduction targets. It is now clear in 2040 that average temperature will rise by at least 5°C and CO² levels will exceed 600ppm in the coming 25 years. Severe weather events, droughts and fires trigger significant national migration from south to north and from water's edge to high ground. Improved climate modeling has put higher probabilities on the "black swan" extreme events, those more than three standard deviations from normal.

Impacts: Climate change has done real damage to the region both ecologically and economically. We begin to worry that the long-term picture is large-scale destruction of the landscape we love. The winter tourism economy is already severely reduced and shrinking. Traditional food production like apples and maple syrup is gradually diminishing. There are more, and worse, ice storms, floods, forest fires and destructive invasive species. Warming accompanied by repeated freeze/thaw cycles caused serious agricultural damage. Loss of snow cover coupled with deep freezes damages fine root systems, killing trees. Long summer dry spells challenge agriculture and hydro power facilities. In response to disasters elsewhere, new people have moved here in pulses, putting strain on infrastructure and housing. New infectious diseases like West Nile virus and tick-borne illnesses are here now.

Responses: We invested heavily in infrastructure resilience, seriously hardening roads and bridges, communications and power networks, emergency response and healthcare systems. Many buildings in flood zones have been raised on stilts, moved, or bought out and razed by FEMA. State policies call for rebuilding better after each disaster with an eye to the long-term changes. Access to accurate GIS data makes it possible to see which solutions provide the best protection. Wireless communications systems (cell and emergency response) are ubiquitous. More redundant and decentralized power systems are critical with so much bad weather. We piloted and deployed distributed clean power and microgrid technology and prepared for more air conditioning. Local government focused on emergency preparedness and improving resilience. Community and regional non-profits expanded their coverage to smaller towns and participated in response networks. Clinics and hospitals prepared to recognize and treat new diseases. Investment in resilience created many new local jobs. Resilience became the new self-reliance. We know we will get hit, the goal is less damage and fast recovery.

Private land use policies changed to move development away from flood plains and other dangerous areas. We worked as best we could to protect our natural resources. We have established quarantine procedures with all necessary permits in place to strike quickly against invasives upon their arrival. Remediation work in lakes and wetlands also was a source of new jobs.

Mitigation has support in the region only if it cuts costs. We did the economically sensible investments, but are still dependent on fossil fuels in many areas such as transportation and thermal heating. Our politicians vote against higher carbon pollution costs, saying the load will fall disproportionately on the rural population. Adaptation and resilience use most available funding, but there is strong competition for these funds as other parts of the State face their own threats, most notably sea level rise on Long Island. Our early proactive investments were critical because they got us ahead of the curve before intense competition for resources really set in.

2040 C: The Hyper-Green Human Refuge

Summary: Our protected landscape has been resilient to the worst effects of climate change and the region actually experiences something of a boom. It is far better here than other places.

Context: Climate change is part of a larger set of environmental concerns that have fairly broad public support. Protection of nature and economic/environmental justice issues are major concerns of most religions. The whole southern tier of the US was far more damaged by climate change than the north.

Impacts: Climate change has been relatively kind to the region. Longer, warmer spring, summer and fall seasons more than made up for a shorter winter. Heating bills have gone down. We still have snow, but fewer snow cover days. We continue to have plenty of water. The forest is remarkably resilient. Sure, the balance of species has changed, but overall biodiversity has increased here and it is a fine destination for hunters, fishermen and hikers. The milder climate made the region more attractive to retirees, tourists and people fleeing the sweltering south. There was significant in-migration, including more businesses and farmers pushed northward by the climate. Certainly many long-term residents and visitors experience the changes as a loss, but the new immigrants think it is a delightful place to live. The problems are real (e.g., more infectious diseases) but they can be dealt with (as more southerly regions have dealt with them historically) and are more than balanced by positive changes.

Responses: We doubled down on our commitment to environmental protection and living sustainably, reinforcing our green brand. Climate change is embedded in planning and policy processes - part of a broader environmental ethic. It isn't really front and center, just one of many environmental issues that include water quality protection and forest restoration. We continue to increase our recycling and composting. We banned plastic bags and cups. We increased our shared transport options and they are used more, especially by younger visitors. There are many more buses and trains providing access to the Park. Visible clean energy projects were welcomed and brought new jobs. We aggressively kept out invasive species and invested heavily in water treatment and storm water management.

Our recreational offerings shifted to nearly year-round golf, fishing, canoeing, hiking, etc. Winter sports venues invested in green refrigeration and ways to use their sites at other times

of the year. We played up the wellness aspect of our region as a destination, a place to rejuvenate and re-experience nature.

More farmers have moved in as a portion of the nation's agriculture relocates from drought-challenged areas of the West and South. They have been able to shift crop and animal varieties to increase production, while reducing their environmental impact. The wines of the region are getting pretty good.

As in-migration picked up, the year-round economy improved as well. Fewer people go south in the winter. We anticipated the boom and set land use policies to enable more housing but not to the detriment of the Forest Preserve or the back country. Most new residents prefer the hamlets and villages not the backcountry. Our broadband infrastructure enabled people with jobs in less habitable climates to live here and work there.

Area churches deeply engaged with environmental issues. Ethical, moral and spiritual engagement with environmental protection proved to be much more effective than scientific reports and angry political movements. Today we mourn the imminent loss of the Everglades and the more fragile western forests, but celebrate the role of this region in providing a sanctuary where humans and nature adapt and sustain each other.

2040 D: Rise Up and Demand Change

Summary: The national/global protest movement for climate action is strong in the region.

Context: A global struggle arose to wrest policy control from the fossil fuel companies and their lobbyists. Protests started to turn violent in parts of the US (e.g., Berkeley) and Europe. This civil society uprising finally forced a serious national discussion on the true risks and the needed policy changes.

Impacts: To the younger generation the reality of climate change is not for debate, having learned the science and its implications since grade school. More and more became radicalized as they saw insufficient action from aging boomers who seem still under the sway of the fossil fuel complex. Area schools are the center of this vocal protest movement.

Responses: Although it took a while to build, a coalition of young people, college professors and environmentalists in the region came together and began to raise its voice. Stopping oil trains traversing the region were an early target, so crowds took to gathering on the tracks. Next came widespread support for the divest movement from area schools and non-profits. There were meetings and rallies throughout the Park that grew slowly in numbers and vehemence. Town and village boards were forced to take action if members wanted to keep their jobs. Something similar to the Common Ground Alliance was formed to bring specific proposals to Albany and then Washington. High school students became more vocal and passionate about this cause than ever before. Sessions at the Youth Climate Summit include political action strategies and influencing elected leaders. Young people educate their parents and older siblings. Young mothers and retired activists get involved. Everyone is talking about climate action and what to do. Finally, this is a top of mind issue here.

The science and research community of the region became much more active politically. Science, well communicated and connected with policy, turned public opinion and stirred leaders to act decisively. Similar to how the region's lakes became a national icon that helped to rally action against the harmful effects of acid rain, it's our regional science that helped galvanize action in New York State to stop these harmful climate changes. We sought and received funding to expand monitoring and experimentation, much of it coming from the region's robust philanthropic community. The results, on display in educational exhibits throughout the Park, strongly reinforce and make tangible the impacts already happening in our forests and lakes. Citizen science projects extend monitoring with the help of students and the early retired. The scientists here are trusted local friends.

Research programs at area schools are focused on some aspect of either mitigation or adaptation, from reforming the power infrastructure to establishing and protecting wildlife refugia. The gentle urgings to be more sustainable have turned into strongly worded calls for serious emissions reduction. Shaming polluters and laggards is a favorite tactic of the social media savvy younger generation.

Well-placed Adirondack environmentalists engaged strongly in national and international efforts at systemic solutions to emissions reduction. Images of devastated forests and fouled waters devoid of iconic birds like the loon motivated the network of influential people connected by generations of family to the region to lobby governments and contribute to foundations. They saw this as the only way to prevent a real catastrophe. Leaders here, long ago, invented the idea of protected wilderness for the planet, and now they have invoked that same kind of statesmanship in this battle to save the planet.

2040 E: Pragmatic and Measured

Summary: We make sensible “no regrets” investments and do not overreact. We learn as events unfold and avoid over-investing and making inappropriate choices.

Context: Climate continued to change in fairly gradual ways and no tipping points were passed. Clean energy continued to improve in terms of cost, efficiency and shorter pay back periods. The business sector pursued many opportunities in efficiency, fuel switching and resilience. Population migrations have not been a big issue in the US. If you live in air conditioned comfort, you can handle more days over 100°. A variety of technological innovations help farmers and the public cope with drought throughout the South and West.

Impacts: There have been many changes in the forests and wildlife, some of it kind of ugly. But ecosystems have always changed and pests have routinely come through the region. Things are different but not terrible. There are storms and damage, but the land and waters recover, often remarkably quickly. Humans and nature turned out to be more resilient than once feared.

Responses: We did what made sense economically. After years of unmet commitments by cities, states and nations to various reduction targets, lower energy costs are what finally drove fuel switching and energy efficiency projects. Investments that made power and communication networks more reliable were clearly beneficial and got done as money became available. Investments in more resilient infrastructure typically came after a big storm, not proactively. When the old firehouse was destroyed, then you built a new one on high ground. There were no programs to aggressively move facilities out of flood plains in anticipation of floods, for example, but higher flood insurance rates and updated FEMA policies guide rebuilding after a disaster.

We took advantage of grant programs that came our way to improve infrastructure and pilot new technologies. Continuing limits on property and sales taxes made it hard for communities to make major investments in either mitigation or adaptation without outside assistance. There were many other problems to work on - investments in education and health care were at least as important as investments in clean energy and resilience. Typically, projects were justified on the co-benefits like cost savings, higher reliability, public health benefits, etc.

The Forest Preserve was left unmanaged. We limited harvesting of private forests for wood energy and don't export pellets from the region. Height limits stop wind projects, fights over views stop solar PV array projects. The tourism industry coped in various ways as they always have. We still worry that out-of-control ‘response’ projects will do more damage than climate change itself, not to mention costing money we don't have.

The general population here had an intuitive understanding that the climate was changing. They really couldn't miss the changes. Since people here are more connected with the outdoors and nature, they experienced it firsthand. So there was no big political fight. People

were kind of turned off by the prophets of doom and scientists that stressed the most extreme scenarios in their models. There has been no huge change in how we live or how we recreate. Everyone is counting on future changes to be as slow and moderate as they have been in the last 25 years.

2040 F: Reaching a Regional Tipping Point

Summary: The region is being severely impacted and there is significant depopulation as global responses to the threat of climate change are insufficient.

Context: The world's political systems were not able to muster a sufficient reduction in GHG emissions to prevent damaging warming and eventual sea-level rise. New sources of fossil fuels, ironically some that are made accessible because of melting polar ice and permafrost, keep the supply high and price low. This severely undermines fuel switching efforts and lengthens payback periods for clean energy investments. The weather is getting really bad; extreme weather happens more frequently.

Impacts: There has been extensive damage to the forest due to ice storms, floods, droughts, fires, blow downs, pests, pathogens and invasive species infestations. The forests are declining, converting stored carbon through decay to greenhouse gas emissions, tipping the balance from sink to source. Smoldering, hard to extinguish fires, formerly seen only in places like Indonesia, dump volumes of CO₂ and black soot into the sky. Air quality is frequently bad.

Community infrastructure has been routinely devastated. It has been hardest for small, poorer towns and small businesses to recover and many people moved to larger towns or cities to reduce their vulnerability. Cities offer the lowest carbon footprint and the best resilience against bad weather. Back country living became increasingly difficult, expensive and less attractive. Tourism is also down as the waters are increasingly fouled and recreational infrastructure slow to be repaired. In these dire times, the Park is a luxury that NY State can't really afford and voter support is waning. Huge costs for recovery and adaptation in the bigger cities of New York State drain dollars away from this increasingly depopulated region. Our already fragile communities are on the brink of collapse as fewer and fewer people want to live here because it is so hard.

Responses: Over the last 25 years lots of programs have been started but none really took a major bite out of our GHG emissions from buildings and transportation. When changes required major investments or behavior changes, they just didn't happen.

Town leaders found it hard to plan and prioritize adaptation efforts since there was so much confusion about what the local impacts would be. First, they were told it would be warmer and wetter, then colder and drier, etc. So decisions and major efforts were postponed.

Financially attractive energy projects got done but then subsidies dried up and progress slowed. When it was a question of going into debt, projects didn't happen. A large segment of the population didn't want to get rid of their old wood stoves or make an investment that pays back over 20 years. And our region's efforts at mitigation weren't going to solve the problem anyway.

There is a growing sense of panic but now it's too late. We've passed a tipping point for our communities and decline seems unstoppable. There is a pervasive feeling that our best days are behind us.