

## **APPENDIX 1**

### The MN 2050 Scenarios

#### **RSDP Central Region Scenarios:**

##### ***The New Frontier***

Global climate change has caused a range of environmental problems, including loss of biodiversity and changed ecosystems. It severely increased stress on precious water resources. Droughts cause crop failures and famines, and trigger massive refugee crises and population dislocations around the world. Even in our land of lakes, intense cultivation of biomass for energy in the early 21<sup>st</sup> century and competition for water drew down the water table and caused frequent crop failures.

This global instability and the uncertainty and higher cost of energy have reduced international travel and trade and re-focused attention in MN on local communities and regional economies. Central MN is more self-reliant and more locally governed, and local planning agencies use innovative watershed-based policies to promote the best use of land. Energy efficient buildings and appropriate technologies are essential because of our need for greater self-sufficiency.

We are not as connected with the rest of the nation and are even only occasionally in touch with friends and relatives more than 50 miles away, but we work to create livable and vital communities. Nearly all of the wild landscapes and native species known to our grandparents are gone; but our highly managed landscape produces nearly all that we need. We have strong families and community-minded neighbors. We have carved out a life on this new frontier.

##### ***Feudal Plains***

Central Minnesota is home to the grand estates and private parks of the very few and the very rich. The energy and industrial barons consolidated wealth and power when they staved off the climate and energy crisis with a new generation of nuclear energy. Now tight governmental regulation by the wealthy elites controls land and resources, maintains energy and water stability, and keeps the environmental refugees mostly beyond the borders of the state.

The system also creates a growing divide between the haves and the have-nots; workers till the fields, tend the orchards, and manage the hunting grounds of the wealthy landowners. Non-wealthy citizens are unable to travel and lead a difficult life. There are conflicts and uprisings against the lords, yet “criminals”, desperate for a better life, who rise up are dealt with swiftly and severely.

Hardships are eased by time with family and connection with community. The have-nots are drawn together, because they lack the means to have a place of their own. Family and local community thrive among the have-nots, because family and community are essential to their survival.

## ***Power Collapse – Population decimation***

From a hand written journal found in a deserted house in central continent called North America. Location named Menahga, MN.

*12/21/22. Freezing rain throughout the day and continuing into the night. I hate December rains! It should be snow on this date.*

*12/22/22 Still raining and temperature is dropping. The rain is starting to form ice on the branches and highline wires.*

*12/23/22 Power is out locally. There are so many lines down they don't know when we will be back on. Have to use the generator but I only have enough gas for two days.*

*12/24/22 Power is basically out everywhere in the country. The downed lines caused an outage cascade. I can only get one station on the TV by satellite. They are talking about widespread panic.*

*12/25/22 Merry Christmas! No power, no gas for the generator, can't pump gas in town because no power! Stores are pretty much empty because of looting even out here in the boonies.*

*12/26/22 Glad I stocked up on ammo for deer hunting. I need to go out and hunt something to live on till things get back to normal. Things are pretty crazy with people stealing and fighting over everything. Didn't realize how dependent we all were on the electric. Think I might as well pack a few things and stay at the hunting shack, easier to heat with the fireplace and has the outhouse.*

No further entries.

In 2050 the second generation after the great collapse is just beginning. The people are groups of families that hunt, gather, and garden. Communities are beginning to form, but the distrust arising from the 2022 crises is hard to overcome. Over 90 percent of the population died in the chaos following the electric grid failure.

Ironically, other parts of the world also suffered this power grid collapse either caused by ice or by flooding. In areas of the world where people were less dependent on the electric system they were less immediately affected, but as the world wide economy collapsed, the only survivors were those who were self sustainable.

## ***BioTechia***

On November 9, 2057 I celebrated my 121<sup>st</sup> birthday. The temp today was 116 degrees.

We drove our new 2057 fuel cell truck to Itasca for a meal that was grown in the new biosphere. The café is run by the new government-controlled food service. The meal consisted of algae on a bed of wild rice, all of which is grown in Petri dishes. We

watched a movie on rivers that were once in Minnesota. We walked through the state park to see the last Norway pine.

Last night for a birthday gift, my wife gave me a 1”x1” piece of beef reconstituted with water! The water was generated by the community fuel cell that powers our new 30 square block prison. Most of the prisoners are in for food theft and murder.

The government-controlled biospheres now can grow genetically modified corn with an ear measuring 3’ in length. Most people refuse to eat it, because it glows and has very little food value. But it is filling.

My son teaches at the state-controlled school. He teaches history. Life is good.

### **RSDP South East Region Scenarios**

#### ***Local Self-Reliance***

- economy driven by locally-owned industries; bartering and trading common
- lower consumption as a result of lower incomes and limited availability and variety of goods
- locally vibrant culture – arts, music, theater produced and performed by local talent and enrich community life; front porches are common
- strong immigrant community comprised of Hmong, Hispanic, African immigrants integrated into communities and share food, culture etc.
- climate change has altered weather and rainfall and impacted local species, but collaborative efforts restore local streams and improve regional ecosystems
- local renewable energy efforts including windmills and biofuels production from prairie grasses, woods and other products
- variety of crops adapted to warmer climate integrated with other food production like aquaculture ponds etc.
- targeted holistic health care limit illness and disease

#### ***Climate Change and Social Decline***

- major shifts to climate and SE region has weather and precipitation comparable to southern plains states in 20<sup>th</sup> century; regular 100° degree days in summers
- frequent tornadoes and more common flood events
- few large industries and high unemployment
- increased poverty and longer work hours for those lucky enough to have a job as they seek to make ends meet
- species extinctions locally and globally
- expensive health care and reduced access to medical treatment
- community businesses, activity emerging in response to decline

### ***Climate and Social Collapse***

- corporate-government entities control natural resources and political-military power
- global climate change reduces food and water availability and are intense conflicts waged over access to resources
- ethnic cleansing
- refugees from environmental degradation and resource conflicts flock to SE Minnesota and local population explodes
- localized conflicts over access to resources, housing etc.
- survival skills are essential
- isolation and fear

### ***A Day in the Life of a Techno-Survivor***

- high-tech transit, communication and energy systems
- bullet train and trolleys
- wind turbines and solar panels are everywhere
- technology used to influence local weather, precipitation
- telecommuting; virtual work is common, and links employees with local and more distant colleagues
- climate change and unstable weather, intense and frequent storms prompt people to live in earth mound houses
- wired and virtually interconnected; face time focused on family

### **RSDP West Central Region Scenarios**

#### ***Theocratic City-states***

Ongoing war and resource collapse led to small city-states. The Church has stepped into the role of government and our township is governed by a board of tolerant and open clergy. As the wars and resource collapse spread and threatened to engulf all of humanity, we organized our collective around tolerance, understanding, faith and ritual. Everyone's roles are described by tradition, and everything we do has a deeper meaning; each day starts with the welcome ritual and we celebrate life and each other in all that we do. We rose from the chaos of the world, and welcomed immigrants of all backgrounds, whatever their faith and from whatever crisis they sought refuge. Immigrants help farm our township lands and help run our local businesses; we thrive because of our diversity. We use remnants of the old technology when needed, but much of our work has been simplified, localized.

#### ***The Promise of Post-Carbon Technology***

Global warming and the depletion of fossil fuels forced a complete renovation in our energy and economy. The U.S. finally adopted a "Cap and Trade" policy in 2012 to curb carbon emissions, and the world has been united in reducing carbon emissions since that

time. Global warming has been arrested and slightly reversed from the terrible years of 2020-2030.

West-central Minnesota enjoys a robust economy based on renewable energy. Technological improvements in biomass processing have displaced corn-for-ethanol and replaced it with thermo-chemical conversion of cellulosic biomass. Most vehicles are all electric as battery technology allows a compact sedan to travel about 1000 miles between charges and a full re-charge to be completed in ten minutes (a nice bathroom stop). Wind energy in our region produces all of the upper Midwest anhydrous ammonia needs. Wind powers biogas and solar sources provide all of our electrical needs. The hydrogen fuel cell is still a promising technology.

Row crop production in our area was displaced due to heat and drought, and a perennial-based agriculture now dominates. Local foods play a prominent role and provide a healthier diet; the need for healthcare has been reduced and life expectancy in our region is well over 100.

There is a diverse and stable workforce in our region. After suffering as refugees, workers and their children remember the tough times and are highly motivated to never let that happen again. They are extremely proud of the role they play to make the world a better place. Life is good.

### ***The Dark Collapse***

Energy Crisis  
Global Climate Change  
widespread disease, natural disasters  
economic collapse, infrastructure breaks down  
food shortages, water crises, violence  
stateless nations, tribalization  
empty cities  
defensive rural communities  
fear drives people apart

### ***Hallibrother International***

We check in upon waking on our arm implant to let central control know we are ready. We're trained to check-in but they know thru metabolic activity sensors what we are doing. One TV station is on and can't be turned off. No choice in programming - propaganda broadcast in support of leaders. Extractive economy means more production, and more natural resource depletion. Profits leave the region; industry controls the land; local environment degraded. Major divisions between haves and have-nots. Government favors industry and wealthy; poor underclass growing.

No expectations of change. No creativity, no imagination, no initiative. Robotic lives.

## *Town Meeting*

The small brown horse scampered across the muddy February landscape.

“I’ll call this meeting to order,” John said, his body rocking in gentle rhythm. A voice in his ear trilled, “John, I’m in the freakn’ shower. How am I going to keep notes?”

“Maria, you may be the secretary, but you haven’t taken notes once in your life. The ‘puter does that. You just wanted to mess with us by presenting the image of you in the shower.”

“Maybe, maybe not. Is the agenda approved?”

“I’ll approve it.” The voice was deeper, with a faint accent. “I do want to add an item about visioning.”

“Ahmad, you Turkish twit, I don’t care what kind of crapola went on around the Caspian, but ‘round here visioning is still a hanging offense.” An assenting chorus from the other council members filled the air, and they moved on to the financial report.

“We have a current balance of \$17,342, there is still nearly 26,000 bushels of corn, two casks of brandy, 73 wheels of Cheddar and I think the prosciutto will be ready to eat by Christmas. In addition, the Omaha community owes us server time and those guys out around Clear Lake have promised three loads of hay and a PlayStation XX in exchange for five days of no-wind electricity. Rochester called and they are still willing to pay a surgical procedure up to a transplant or seven appendectomies, in exchange for our spare bearing for the Vesta 1.79 turbine.”

“Why are we still getting the kids video games? Couldn’t we cancel the PlayStation XX for a turbine bearing repair?”

“Is that a motion, Fred? If not, shut up – I don’t want my kids hearing that.”

“Well, if the rest of you guys don’t want it in a motion, I certainly won’t interfere with the will of the whole.”

“Plus, your kids would slit your throat and you know it. Next item.”

“Public Defense here. Those folks who made it here all the way from Belize are settled down by the lake. They say they know aquaculture, and if we will feed them for six months, they’ll be turning out crawfish and have pens built for panfish.”

“Is there a motion?”

“I move we provide them with a Level Three diet, with milk supplements for the children, for the period of eight months, at which point if they’re not pulling their weight we put them on the road again.”

“I’ll second that, but keep my wife away from those kids, or she’ll never agree to putting them on the road. All those in favor?”

John didn't think he heard a unanimous vote, but it seemed like more than a hundred, which would be a clear majority so he didn't even ask for a tally vote.

The grass was greening around him, with only a few grimy piles of snow in the shadows of the wind turbines that were the community's main cash crop. Angora goats grazed on the last remnants of the leafy spurge which had almost ruined the pastures until the guy in Dickenson had hooked them up with a goat rancher in the Black Hills with excess inventory.

He dismounted and opened and closed a gate leading into the Season 6 rotational pasture. The mixed prairie grasses were still nearly head high, even after a winter's weather. The ground squished around his boots and he knelt long enough to scoop up a handful of mud, kneading it gently as he stared off to the horizon. Felt good – still a clay loam, but pretty good body and organic matter.

“Any other business to be brought before this board at this time?” He paused a moment and then said, “Hearing none, this meeting of the board of Otre Township, Big Stone County, State of Minnesota is declared adjourned until next month, date to be determined by when we finish planting wheat.”

The little green light in the corner of his peripheral vision, indicating a group conversation, shut off and he was alone with the springtime. He slowly rose to his feet, knees and ankles cracking, after a morning on horseback feeling every day of his 83 years. *How much longer?* he wondered. *I've paid my dues. I was forty when the first crash came, the Middle East blowing up, the no gas, no electricity, no nothing.* He remembered being cold and hungry, everyone scared, and yet holding this place together, cutting loose from the grid and getting all the work done during daylight days or when the wind had the turbines cranking out juice, shivering by a woodburner on the cold January days when the wind didn't blow. Catching a deep breath when no one was starving and then the harder work of convincing the neighbors to return to society, hooking back up to the grid, taking in refugees when they could, working to build the connections that could get you through the hard times. Washington not much help, not even before the tsunami and not at all afterwards. The dark years took him away, but then his eye focused on what was nearly beneath his boot. He reached down, plucked, and returned to his feet.

He stretched, and led the horse down the hill to the house and his granddaughter headed up to take the horse to the barn. Eighty years of being a farmer made him not aware that he was aware of everything, from the grape vines along every path to the solar collectors running the water treatment plant.

“Hey sweetheart,” his wife said as he came through the door, “How was your day?”

“Pasture looks good, the damn town meeting is over for another month and I saw a blue heron on the slough. Oh, and I found a crocus for you.” He held out a small blue flower on a drooping stem. She patted his chest and stuck the flower in a jelly jar above the sink. “Life is good, darling, life is good.”

## **Statewide Scenarios:**

### **Regional Self-Reliance**

- skyrocketing energy prices and geo-political instability trigger collapse of international trade
- climate change has altered weather and rainfall, impacted native species and ecosystems and stressed limited water resources
- use of diverse crops adapted to warmer climate is integrated with other food production like aquaculture ponds etc.
- local renewable energy efforts including windmills and biofuels production from prairie grasses, wood and other products
- economy driven by regional and locally-owned industries; bartering, trading, cooperatives common
- reduced consumption as a result of lower incomes and limited availability/variety of consumer goods
- regionally-focused politics and civic engagement through town hall meetings
- diverse immigrant community of Hmong, Hispanic, African immigrants integrated and revitalized rural communities and agricultural economy
- collaborative watershed-based efforts to restore local streams and improve regional ecosystems; open space that creates wildlife corridors highly valued
- communities support health services and target holistic preventive health care, in part because of reduced access to specialists and pharmaceuticals

### **Pandemic and Socio-economic Collapse**

- Global human populations decimated by new highly virulent disease
- Bubble living: people wear hoods, masks and special gloves
- breakdown of government, infrastructure, energy and food production systems
- immediate and almost total reduction in greenhouse gas emissions, deforestation, resource extraction as global society reverts to pre-industrial scale subsistence
- few large industries and increased poverty, labor shortage leads to opportunities for survivors
- intense conflicts over access to safe resources, housing etc.; high crime, wars, ethnic cleansing
- emergence of nomadic, tribal culture and refugees flock to rural Minnesota for water resources and tillable land
- survival skills are essential
- isolation and fear

### **Green Industrial Minnesota**

- Energy independence and wind/biomass energy export
- high-tech transit like bullet trains, Individual Rapid Transit Pods, Hydrogen Trolleys



- huge industrial wind farms in western MN; wave and current power generation in Superior, biomass from agriculture and wood by-products; algae biodiesel; solar panels are everywhere
- water resources tightly controlled and extremely valuable for green industry; technology used to induce precipitation during major droughts
- telecommuting; virtual work is common, and links employees with local and more distant colleagues
- adaptation to unstable weather with high-tech “earth mound” structures resistant to intense and frequent storms and huge temperature swings
- intensive agro-industrial crop management to attain maximal efficient use of water, energy and nutrients
- all available lands in production to meet regional and global energy needs; virtually no parks or other “set-asides” because workable land too valuable
- increased population and in-migration to support green industry
- green buildings and products industry achieves almost carbon-neutral building construction and operation

### **Urbanized BioTechia**

- population highly concentrated in large cities and urban areas
- regional fossil fuel reserves provide the majority of energy needs
- virtual reality and electronic networks are core component of personal and professional lives
- cutting-edge medical, food, and life-prolonging technology available to wealthy elites
- trade focuses on regional level; most food, raw materials, energy, goods and services come from Midwest US
- cities rely on large urban police and private security forces while rural Minnesotans are more isolated and have to protect themselves and their families
- small middle class and many urban poor
- catastrophic weather events (like tornadoes, droughts and floods) are frequent

### **Corporate Industrialism**

- corporate-government entities control industry and food production, water and natural resources, and political-military power
- environmental pollutants and greenhouse gas emissions highly regulated under centralized energy production
- powerful energy and industrial barons and high level bureaucrats own land and employ workers in the fields, orchards, and hunting grounds of the wealthy
- uprisings and food riots quickly quelled by state authorities
- media, entertainment and communication systems and education are state-run
- personal activities and resource use monitored and resource degradation significantly reduced through regulation and state oversight
- tight governmental control keeps the environmental refugees mostly beyond the borders of the state