MI POWER GRID

Making the Most of Michigan's Energy Future

MIRPP & Filing Requirements

Advanced Planning Stakeholder Meeting

February 28th, 2022

MPSC

Michigan Public Service Commission

Workgroup Instructions

1. This meeting is being recorded.
2. Please be sure to mute your lines.
3. There will be opportunities for discussion throughout each presentation. Please use the raised hand function and the presenter will call on you when it is your turn to speak or type your comment in the chat.
4. Please be respectful and courteous when others are speaking.
5. We will be requesting comments after all meetings. All comments will be posted to the webpage.
6. The presentations for all meetings are posted to the Advanced Planning webpage.
7. If you are having technical difficulty, please contact Kayla Gibbs at GibbsK2@michigan.gov.

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Agenda Items		
1:00 p.m.	Introduction	Naomi Simpson (MPSC)
1:05 p.m.	Review Updates to Environmental Regulation	Breanna Bukowski (EGLE)
1:35 p.m.	Environmental Considerations	Breanna Bukowski (EGLE) Keisha Williams (EGLE)
2:20 p.m.	Break	
2:30 p.m.	MI EJ Screen Tool	Regina Strong (EGLE)
3:00 p.m.	COBRA	Shelley Jeltema (DTMB/EGLE)
3:30 p.m.	Break	
3:40 p.m.	MIRPP and Filing Requirements Discussion – Miscellaneous Topics	Naomi Simpson (MPSC) Jesse Harlow (MPSC) Roger Doherty (MPSC)
4:30 p.m.	Adjourn	

Phase III Stakeholder Meetings

- Meeting #1 December 16th
  - Initial Staff Drafts, Review Potential Study Results, Solicit Feedback
- Meeting #2 January 31st
  - Review Stakeholder Feedback Highlights on MIRPP and Filing Requirements, Base Case Scenario Stakeholder Discussion, Climate Change Stakeholder Discussion.
- Meeting #3 February 28th
  - Review Environmental Rules/Laws in MIRPP, Review Environmental Considerations in Filing Requirements, Demo EJ Tool, Electrification and Decarbonization Scenario Discussion including Carbon Counting.
- Meeting #4 March 24th
  - Climate Change in Modeling
  - Scenario #1 and #2 Discussion
- Meeting #5 Late April
  - Review Refined Drafts with Stakeholders and Solicit final Feedback Due in May.

MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

Review Updates to Environmental Regulation

Breanna Bukowski

Environmental Quality Analyst

Air Quality Division

Review Updates to Environmental Regulation

National Ambient Air Quality Standards (NAAQS):

SO_2 (Round 1 Designations)

- October 2013 – portion of southern Wayne County designated nonattainment
- May 2016 - EGLE submits SO_2 SIP strategy for southern Wayne County to the USEPA
- Lawsuit related to a portion of the SIP, USEPA currently pursuing FIP
- January 2022 – USEPA makes formal determination; Wayne County did not attain by 2018 deadline
- FIP expected to be publicly available this winter

Review Updates to Environmental Regulation cont…

National Ambient Air Quality Standards:

SO_2 (Round 2 Designations)

- September 2016 – portion of St. Clair County designated nonattainment
- November 2016 – 2 additional monitors installed in nonattainment area
- July 2020 – EGLE submits clean data determination
- December 2021 – EGLE's CDD approved
- Summer 2022 – redesignation preparation

Review Updates to Environmental Regulation cont…

National Ambient Air Quality Standards:

Ozone

- August 2018 – 7 county SE Michigan, Berrien and partial counties Allegan and Muskegon designated nonattainment
- August 2021 – Attainment deadline
  - Areas did not attain using 2018-2020 ozone season data
  - SEMI DID attain using 2019-2021 ozone season data
- January 2022 – SEMI redesignation submitted
- Winter 2022 – “bump up” to moderate nonattainment expected for west MI counties
- Late spring/early Summer 2022 – SEMI redesignation expected approval

Review Updates to Environmental Regulation cont…

Cross State Air Pollution Rule (CSAPR):

- March 2021 – Revised CSAPR update finalized for 2008 ozone NAAQS
  - Leads to the reductions of NOx by 12 states including MI

Mercury and Air Toxics Standard (MATS):

- May 2020 – USEPA corrects flaws in 2016 supplement cost finding (consistent with 2015 court decision)
  - Completed residual risk and technology review (CAA required)
- January 2022 – Proposal to reaffirm determination that it's appropriate and necessary to regulate HAPs from power plants after considering costs
  - Revokes 2020 finding that not appropriate and necessary to regulate coal and oil-fired power plants under CAA Section 112

EGLE

Review Updates to Environmental Regulation cont…

Section 111(d):

- June 2019 – Affordable Clean Energy (ACE) Rule promulgated
  - No established carbon emission reduction goals/targets
  - Inside the fence line approach; Best System of Emission Reduction = heat rate improvements at each electric generating unit

- January 2021 – ACE rule vacated and remanded back to USEPA

- October 2021 – court issued writ for petitions for review of January 2021 court decision
  - Oral Arguments – February 28, 2022
  - Decision expected by June 2022

Review Updates to Environmental Regulation cont…

Regional Haze:

- August 2021 – EGLE submitted second required periodic update
  - Currently being reviewed by USEPA

Steam Electric Effluent Guidelines (SEEG):

- October 2020 – finalized revisions for bottom ash transport water and flue gas desulfurization (FGS) wastewater
  - Allows for less costly technologies
  - 2-year compliance deadline extension
  - Voluntary incentive program for more restrictive limitations for FGD wastewater with longer compliance deadlines
  - Allowance for EGUs decommissioning by end of 2028 to not comply with more costly and restrictive requirements of 2015 effluent limitation guidelines
  - December 2025 – latest compliance deadline for bottom ash and FGS
  - August 2021 – published announcement on decision to again undertake rulemaking to again revise SEEG
    - Fall 2022 – expected to propose revised rulemaking for public comment

Review Updates to Environmental Regulation cont…

State Rules and Laws:

Solid Waste Management (Part 115)

- 2018 – Part 115 amended to include majority of resource conservation and recovery act (RCRA) regulations including coal combustion residuals surface impoundments used for storage
- Michigan's request for state program currently being reviewed by USEPA

Additional Considerations:

- June 2021 – USEPA announced plans to reconsider December 2020 decision to retain current particulate matter standards; targeting summer 2022 for proposed rule and spring 2023 for final rule
- October 2021 – USEPA announced plans to reconsider December 2020 decision to retain current ozone standard; targeting end of 2023 for completion
- Replacement for the Clean Power Plan/ACE rule expected as early as summer 2022
- February 2022 – Michigan CSAPR transport SIP proposed disapproval (along with many other states); potential FIP? Another CSAPR update?

Questions

Thank you!

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ENVIRONMENTAL CONSIDERATIONS

Air Quality Division

Breanna Bukowski
Environmental Quality Analyst

Keisha Williams
Toxicologist

Environmental Considerations

Suggested additions/modifications to utility filing:

1. Hold a technical conference with MPSC and EGLE staff within 30 days after the filing to discuss the environmental and emission related data included in the filing testimony, exhibits and workpapers.
2. Identify, quantify, and provide testimony that compares the expected changes in criteria pollutants, mercury, VOCs, and GHG emissions of the Proposed Course of Action (PCA), reasonable alternatives to the PCA presented by the utility, and previously approved build plan in the Business as Usual (BAU)-scenario (optimized to select additional resources as needed). The utility will explain the methodology used to determine the emissions from MISO purchases. The utility will also use the BAU scenario and run it with two specific build plans for the purpose of comparing emissions: BAU optimized build plan and utility's PCA build plan.

Environmental Considerations

Suggested additions/modifications to utility filing cont..:

3a. Analyze multiple build plans, including the PCA run in the BAU scenario**,** the optimal build plan from the BAU scenario, the optimal build plan from the BAU scenario under a high load sensitivity, and any other build plans that the utility presents as alternatives to the PCA to identify and qualitatively assess the potential impacts to vulnerable communities. The Michigan Environmental Justice Screening Tool or equivalent should be used for the identification of vulnerable areas , including areas with higher disease rates compared to the rest of the state, within a 3-mile radius of each facility. Other alternative tools available through the USEPA can be used in its absence. This qualitative assessment should address water quality and waste disposal.

3b. Analyze the same build plans detailed above (in 3a) to identify and quantitatively assess the potential impacts to vulnerable communities. This quantitative assessment should address air emissions and their potential health impacts, and early retirement. Explain how these considerations were taken into account in the utility's decision.

Environmental Considerations

Suggested additions/modifications to utility filing cont..:

4. Identify and assess the impact to non-attainment areas that the PCA has when run in the BAU scenario. This analysis should include an assessment of impacts to any non-attainment area within the electric utility service territory as compared to the previously approved build plan, and qualitatively support in testimony. Impacts should consider all nonattainment pollutants (i.e. SO_2 and ozone), as well as their precursors (i.e. NO_x and VOCs).

Environmental Considerations

Suggested additions/modifications to utility filing cont..:

5. Using the areas identified as vulnerable by the Michigan Environmental Justice Screening tool, or equivalent (see #3 above) complete a comprehensive evaluation of PM2.5 impacts to these communities by comparing the previously approved build plan in the BAU scenario (optimized to determine additional resources that may be needed) to the PCA, describing expected air quality impacts. Analyze multiple build plans, including the PCA in the BAU scenario**,** the optimal build plans from the BAU scenario, the optimal build plan from the BAU scenario under a high load sensitivity, and any other build plans that the utility presents as alternatives to the PCA to identify and quantitatively compare the expected PM 2.5 impacts that would be projected to happen from each build plan. Justification should be provided for why the PCA was chosen if it is not shown to be the lowest emitting option**.** Include the effect of any early retirements in all analyses.

   Conduct dispersion modeling of the fossil fleet for PM2.5. The current emissions should be used to establish a baseline modeling demonstration by which to compare the future impacts of the PCA in the BAU scenario.

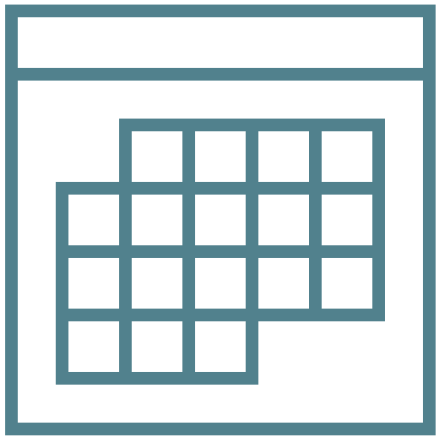
Environmental Considerations

Suggested additions/modifications to utility filing cont..:

6. Include metrics to quantify health benefits**/**costs related to air emission reductions/increases expected to occur through the implementation of the utility's PCA as compared to its previously approved build plan in the BAU scenario for each facility emitting PM2.5 in alignment with item #5 and assess the impacts of early retirements and renewable energy adoption that leads to emission reduction across the MI-based fleet using the following tools:
   - Environmental Benefits Mapping and Analysis Program - Community Edition (BenMAP-CE) **OR**
   - Co-Benefits Risk Assessment (COBRA) Health Impacts Screening and Mapping Tool

   The associated narrative should also include considerations for publicly available analyses of the fleet's emissions that have been conducted by other entities.

Environmental Considerations



Environmental Justice Subgroup meeting dates:

- March 23rd 2:00 – 3:30
- April 14th 3:00 – 4:30

Questions

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Break

Please mute your microphone and turn off your camera during break.

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Michigan EJ Screening Tool (MiEJScreen)

Regina Strong

Environmental Justice Public Advocate

The Executive Order

Governor Whitmer created the Office of the Environmental Justice Public Advocate and the role of Environmental Justice Public Advocate in Executive Order 2019-06

Office of the EJPA was created as a Type I agency housed within EGLE's Executive Office.

As a Type I agency, the office has a direct line to governor's office

Interagency Environmental Justice Response Team was established.

EGLE

What is Environmental Justice?

Environmental Justice is the **equitable treatment** and **meaningful involvement** of all people regardless of race, color, national origin, ability or income and is critical to the development and application of laws, regulations, and policies that affect the environment, as well as the places people live, work, play, worship and learn.

What do we mean by "equitable treatment?"

No group of people bears a disproportionate share of the negative consequences resulting from governmental, industrial or commercial operations and policies

All people benefit from the application of laws and regulations

Eliminating barriers such as poverty and lack of access, as well as repairing systemic injustices

What do we mean by “meaningful involvement”

People have an opportunity to participate in decisions that affect their environment and/or health

Decision makers seek out and facilitate the involvement of those potentially affected

People’s concerns are considered in decision-making processes

People can influence state agency decisions

EJ History in Michigan

- Both the Granholm and Snyder administrations made previous attempts to address environmental justice.
- Working groups were convened during both administrations to look at the best ways to engage environmental justice communities.
- The Flint Water Crisis served as a turning point.
- Advocates have long advocated and pushed for recognition of environmental justice issues.

Background

Environmental Justice Work Group Report (March 2018) Recommendation:

"Develop an environmental justice screening tool in Michigan and include cumulative impacts in the decision-making processes"

- Assessing the State of Environmental Justice in Michigan (Grier, Mayor, Zeuner) May 2019
- Environmental Justice Tools for the 21st Century (Blondell, Kobayashi, Redden, Zrzavy) May 2020
- Identified as a priority of the Interagency Environmental Justice Response Team and Office of Environmental Justice Public Advocate
- Data and Research Workgroup (first meeting December 2019)

EGLE

Purpose

- Develop a Michigan specific mapping tool
- Assess cumulative factors (environmental, socioeconomic, health) that communities in Michigan may face
- Help inform decisions, allocate resources, and address community specific issues/concerns
- Able to be used by multiple stakeholders

Process

REVIEW EXISTING TOOLS/METHODOLOGY

COLLABORATION FROM VARIOUS STATE DEPARTMENTS

STAKEHOLDER INVOLVEMENT

Methodology

- Based on California's CalEnviroScreen
- Spatial analysis of relative burdens in Michigan communities at the census tract level
- Uses both national and statewide indicators
- Uses percentiles to assign scores for each indicator
- Uses a scoring system in which the percentiles are averaged for the set of indicators in each of the four components
- Combines the component scores to produce cumulative score for a given place relative to other places in the state

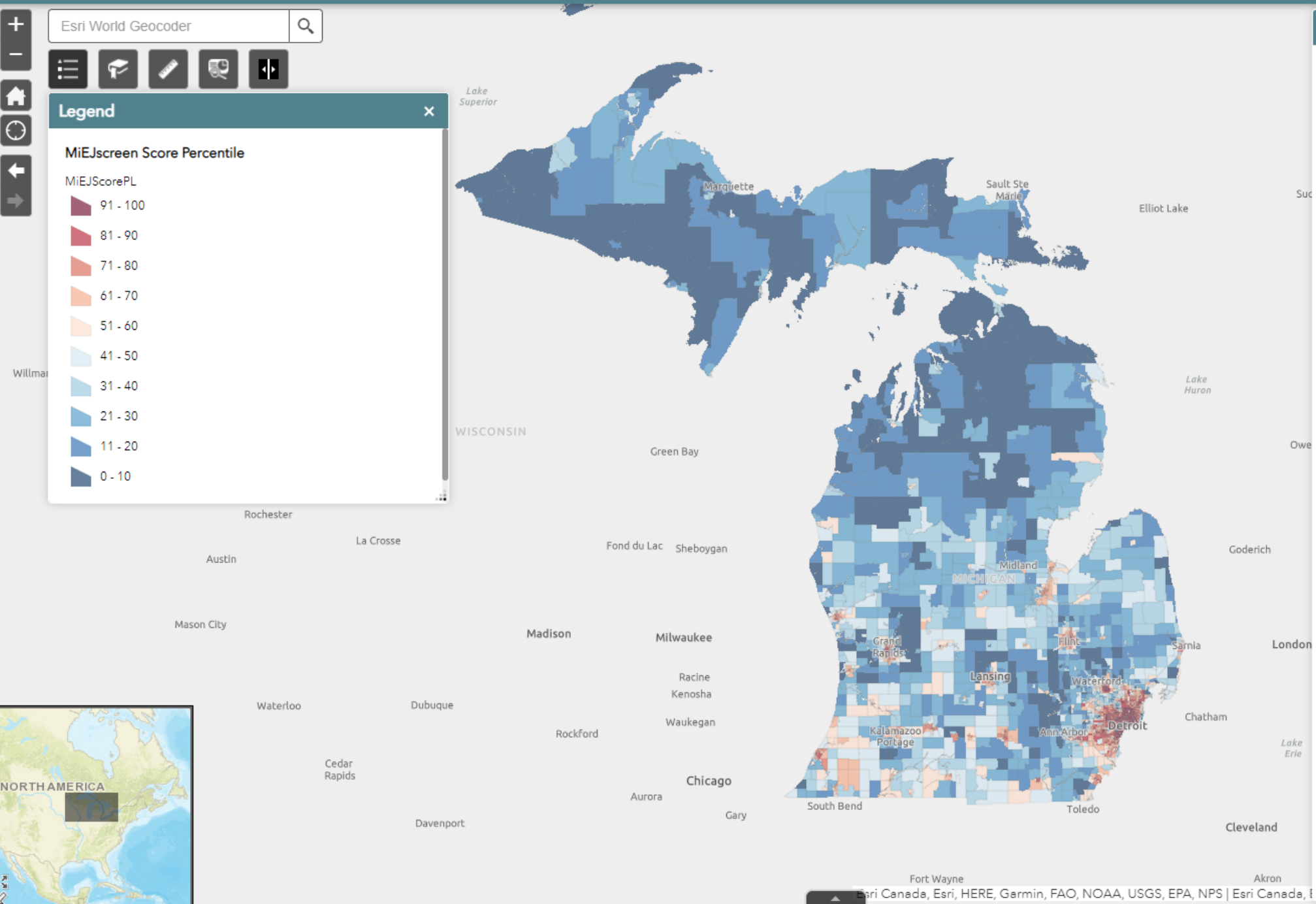
Categories	**Environmental Exposure**	**Environmental Effects**	**Sensitive Populations**	**Socioeconomic Factor**
	NATA Air Toxics Cancer Risk	Proximity to Cleanup Sites	Asthma	Low Income Population
	NATA Respiratory Hazard Index	Proximity to Hazardous Waste Facilities	Cardiovascular Disease	Black, Indigenous, People of Color Population
	NATA Diesel Particulate Matter	Impaired Water Bodies	Low Birth Weight Infants	Educational Attainment
	Particulate Matter ($PM_{2.5}$)	Proximity to Solid waste Sites and Facilities	Blood Lead Level	Linguistic Isolation
	Ozone	Lead Paint Indicator	Life Expectancy	Population Under Age 5
	Traffic Density	Proximity to RMP Sites		Population Over Age 64
		Wastewater Discharge Indicator		Unemployment
				Housing Burden
Indicators	**Environmental Conditions**		**Population Characteristics**	
	(Average percentile of Environmental Exposure indicators + 0.5 x average percentile of Environmental Effects indicators) / 2		(Average percentile of Sensitive Population indicators x average percentile of Socioeconomic Factor indicators) / 2	
Score	**Final Composite Score = Environmental Conditions score x Population Characteristics score**			
	MiEJScreen Score			

Indicator	Details	Source	Data Year
Environmental Conditions: Environmental Exposure Indicators			
NATA Air Toxics Cancer Risk	Lifetime cancer risk from inhalation of air toxics	EPA EJSCREEN, retrieved 2020	2014
NATA Respiratory Hazard Index	Air toxics respiratory hazard index (ratio of exposure concentration to health-based reference concentration)	EPA EJSCREEN, retrieved 2020	2014
NATA Diesel PM	Diesel particulate matter level in air, µg/m3	EPA EJSCREEN, retrieved 2020	2014
Ozone	Ozone summer seasonal average of daily maximum 8-hour concentration in air in parts per billion	EPA EJSCREEN, retrieved 2020	2017
Particulate Matter ($PM_{2.5}$)	$PM_{2.5}$ levels in air, µg/m3 annual average	EPA EJSCREEN, retrieved 2020	2017
Traffic Density	Traffic density within a buffered (150 meters) census tract, normalized vehicles per day/adjusted length-based road (miles)	Michigan Department of Transportation, Annual average daily traffic (AADT) volumes and National functional classification (NFC) data files	2019

Indicator	Details	Source	Data Year
Environmental Conditions: Environmental Effects Indicators			
Impaired Water Bodies	Summed number of pollutants across all water bodies designated as impaired within the area.	EGLE, Water Resources Division 303(d) List of Impaired Water Bodies	2020
Solid Waste Sites and Facilities	Proximity to licensed landfills, old dumpsite, and scrap tire sites	EGLE, Material Management Division	2020
Hazardous Waste Generators and Facilities	Proximity to hazardous waste facilities (TSDFs and LQGs).	EPA EJSCREEN (retrieved 2020) and EGLE, Material Management Division	2020
Cleanup Sites	Proximity to Part 201 cleanup sites, Part 213 leaking underground storage tank sites, and Superfund sites (EPA NPL).	EGLE, Remediation and Redevelopment Division and EPA EJSCREEN (retrieved 2020)	2020
Lead Paint	Percent of housing built before 1960	American Community Survey (ACS) through ESRI Living Atlas of the World	5 year estimate, 2015-2019
RMP	Proximity to facilities with Risk Management Plans	EPA EJSCREEN (retrieved 2021)	2020
Wastewater Discharge	Risk-Screening Environmental Indicator Model (RSEI) toxic concentrations at stream segments within the area	EPA EJSCREEN (retrieved 2021)	2020

Indicator	Details	Source	Data Year
Population Characteristics: Sensitive Populations Indicators			
Asthma	Spatially modeled, age-adjusted rate of emergency department visits for asthma per 10,000	Michigan Hospital and Health Association. Division for Vital Records and Health Statistics, MDHHS	2016-2019
Heart Disease	Spatially modeled, age-adjusted rate of hospitalization for cardiovascular disease per 10,000	Michigan Hospital and Health Association. Division for Vital Records and Health Statistics, MDHHS	2016-2019
Low Birth Weight	Percent low birth weight averaged over 2014-2019	Michigan Birth Files. Division for Vital Records and Health Statistics, MDHHS	2014-2019
Life Expectancy	Average number of years a person can expect to live	United State Small-area Life Expectancy Estimates Project	2010-2015
Blood Lead Level	Percent of tested children with elevated (≥ 5 µg/dL) blood lead levels	MDHHS	2018-2019

Indicator	Details	Source	Data Year
Population Characteristics: Socioeconomic Factor Indicators			
Educational Attainment	Percent of population over age of 25 with less than a high school education	American Community Survey (ACS) through ESRI Living Atlas of the World	5 year estimate, 2015-2019
Linguistic Isolation	Percent limited English-speaking households	ACS through ESRI Living Atlas of the World	5 year estimate, 2015-2019
Poverty	Percent of population living below two times the federal poverty level	ACS through ESRI Living Atlas of the World	5 year estimate, 2015-2019
Unemployment	Percent of the population over the age of 16 that is unemployed and eligible for the labor force. Excludes retirees, students, homemakers, and institutionalized persons	ACS through ESRI Living Atlas of the World	5 year estimate, 2015-2019
People of Color	The sum of all race/ethnicity categories except White/Non-Hispanic. It includes Black, American Indian/Alaskan Native, Asian, Native Hawaiian-Other Pacific Islander and two or more races	ACS through ESRI Living Atlas of the World	5 year estimate, 2015-2019
Housing Burden	Percent of households spending over 30% of income on housing costs	ACS	5 year estimate, 2014-2018
Population Under 5	Percent of population under age 5	ACS through ESRI Living Atlas of the World	5 year estimate, 2015-2019
Population Over 64	Percent of population over 64	ACS through ESRI Living Atlas of the World	5 year estimate, 2015-2019



Layer List

Layers

- [x] MiEJscreen Score Percentile
- [ ] ----Environmental Conditions Percentile
- [ ] ----Population Characteristics Score Percentile
- [ ] 1) Environmental Conditions: Exposure
- [ ] ----a) NATA Air Toxics Cancer Risks
- [ ] ----b) NATA Respiratory Hazard Index
- [ ] ----c) NATA Diesel Particulate Matter
- [ ] ----d) Particulate Matter 2.5 (PM2.5)
- [ ] ----e) Ozone
- [ ] ----f) Traffic Proximity and Volume
- [ ] 2) Environmental Conditions: Environmental Effects
- [ ] ----a) Cleanup Sites Proximity
- [ ] ----b) Treatment and Disposal Facilities Proximity
- [ ] ----c) Impaired Waters
- [ ] ----d) Solid Waste Proximity
- [ ] ----e) Lead Paint Indicator
- [ ] ----f) RMP Proximity
- [ ] ----g) Wastewater Discharge Indicator
- [ ] 3) Population Characteristics: Sensitive Populations
- [ ] ----a) Asthma Emergency Room Discharges

Context Layers

Michigan PFAS Sites	Ozone/SO2 Non-Attainment Areas	Schools, hospitals, places of worship
Roads and railroads	Boundaries (zip code, cities, counties, tribal areas, etc.)	Redlining maps
Sites reporting to EPA	Impaired water boundaries	Population density
Public housing	Prisons	EJ Grants

Next Steps

Draft version available for public comment soon

Review and incorporate public comment

Final version available 2022

Update tool as new data and methodologies are developed

Questions

Thank you!

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COBRA

Shelley Jeltema

GIS Expert – Data Architect

Air Quality Division

CO-Benefits Risk Assessment Model

Preliminary screening tool

Explore Air Pollution changes brought about by:

- Clean energy policies
- Human Health programs at the following levels:
  - County
  - State
  - Regional
  - National
- Estimate the economic value of health benefits associated with the above policies
- Compare health benefits against program costs

Mapping Tool:

Visually represent health-related economic benefits from emission reductions of:

- Particulate Matter (PM2.5)

(The following will be available in future versions)

- Sulfur dioxide (SO2)
- Nitrogen oxides (NOX)
- Ammonia (NH3)
- Volatile Organic Compounds (VOCs)

EPA's COBRA Screening Model Versions

COBRA Web Edition

- Preloaded input data for 2023
- Run from any internet capable device with a web browser
- Streamlined
- Visualize data in a map

COBRA Desktop Edition

- Preloaded input data for
  - 2016
  - 2023
  - 2028
- Import custom baseline data sets
- Visualize data in a map

NOTE: Both use the SAME methodology to calculate outdoor air quality and health impacts from changes in air pollution emissions

Model Scope and Spatial Resolution

Inputs

Source-Receptor (S-R) Matrix model: estimates the effects of emission changes on ambient Particulate Matter

Emission data can be from the following levels:

- County
- State
- National

Outputs

Estimates of health impacts:

- Contiguous United States
- County-level

What COBRA Estimates

- Adult & Infant Mortality
- Non-fatal Heart Attacks
- Cardiovascular-related Hospital Admissions
- Min Restricted Activity Days
- Work Loss Days
- Respiratory Hospital Admissions
- Acute Bronchitis
- Upper & Lower Respiratory Symptoms
- Asthma:
  - Attacks
  - Shortness of breath
  - Wheezing
- Asthma Emergency Room Visits

COBRA Data

Baseline Emissions are taken from:

2014-2016 Version 7 Air Emissions Modeling Platforms | US EPA

COBRA Web baseline is for 2023

COBRA Desktop baselines:

- 2016
- 2023
- 2028

COBRA Limitations

COBRA is screening tool and cannot be used for:

- Determining attainment/compliance
- Estimating dynamic market effects – e.g., electricity market responses to policy changes
- Use caution when analyzing net impacts of policy changes
- See COBRA User Manual, page 16 for more detailed information

Technical peer reviewers found COBRA to be “a valuable model that produces a screening tool that can contribute to policy analysis and public dialogue.” (How COBRA Works)

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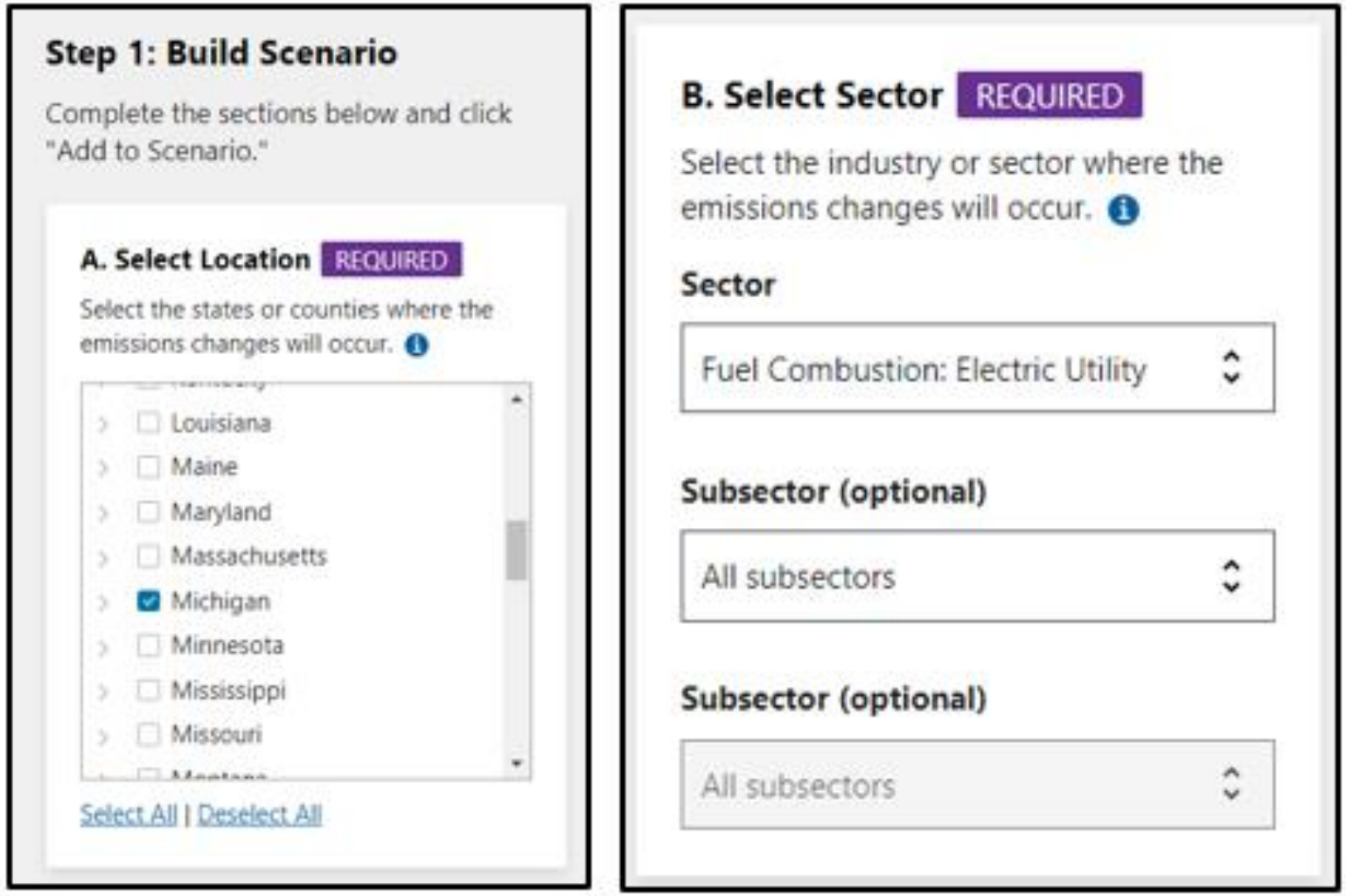
COBRA Web Demo Scenario

Estimate Impacts of Different Build Plans from Capacity Expansion Models-County Level Emissions:

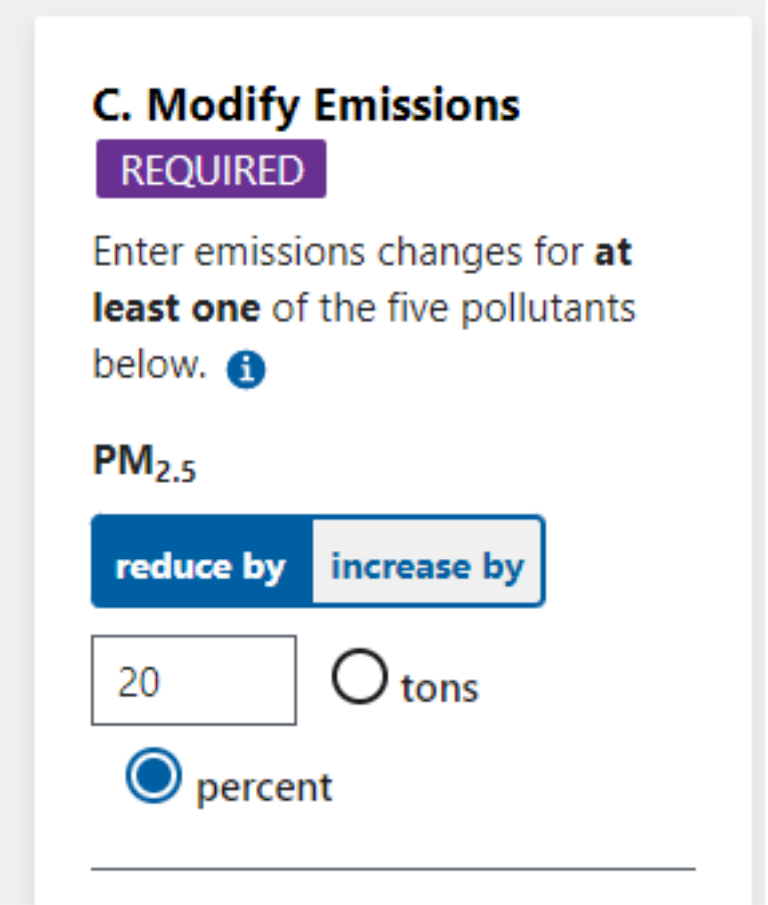
Fleetwide emissions, estimate the impact of renewable energy of:

- New 100 MW solar installation
- Fleetwide 20% reduction in PM2.5 emissions

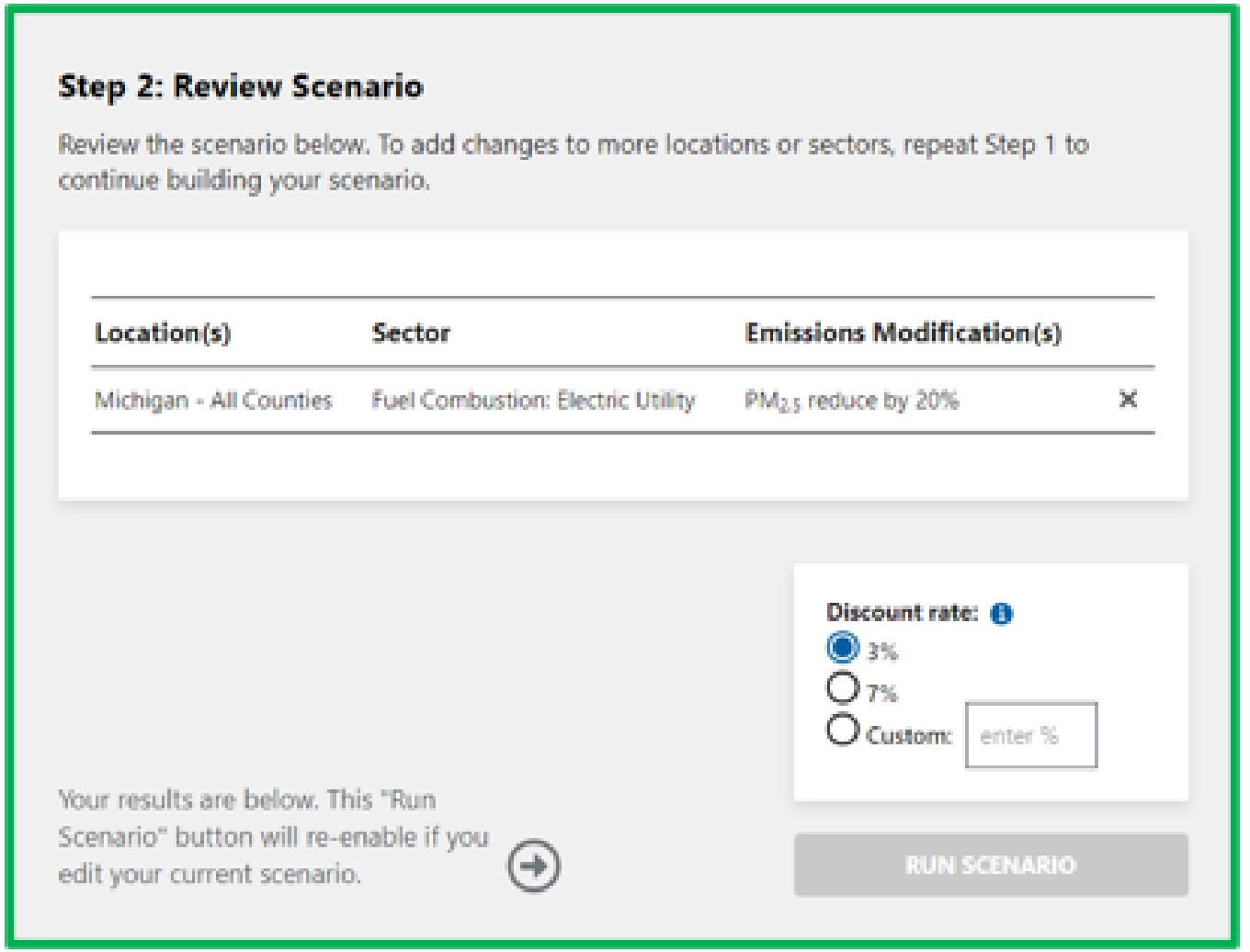
COBRA Web – 100 MW Solar: Step 1A & 1B



COBRA Web – 100 MW Solar: Step 1C



COBRA Web – 100 MW Solar: Step 2



COBRA Web – 100 MW Solar: Step 3A

COBRA Web – 100 MW Solar: Step 3A Wayne County Results

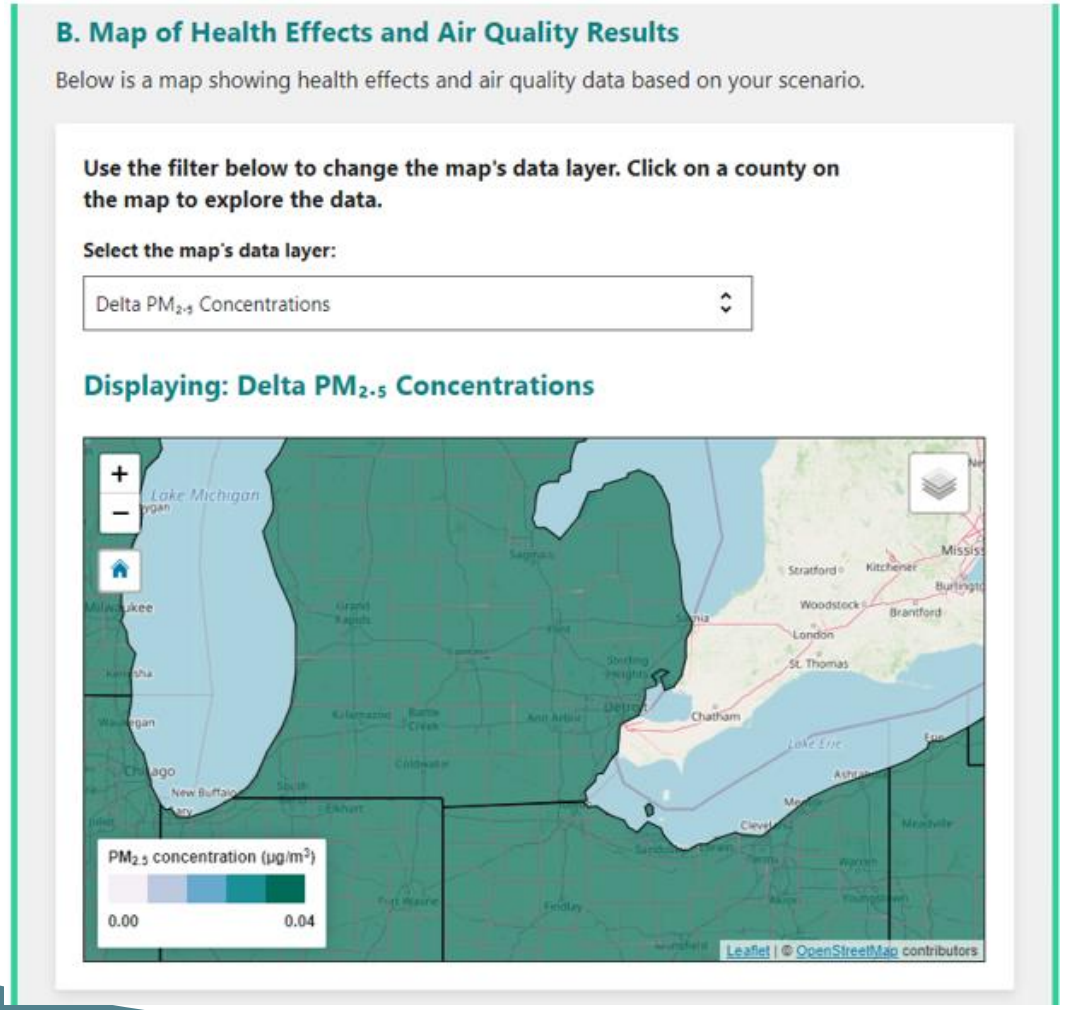
Export: All results | Current filter

Health Endpoint	Change in Incidence (cases, annual)		Monetary Value (dollars, annual)	
	Low	High	Low	High
Mortality *	1.072	2.432	$11,725,612	$26,611,809
Nonfatal Heart Attacks *	0.068	0.634	$11,217	$104,213
Infant Mortality	0.008	0.008	$96,600	$96,600
Hospital Admits, All Respiratory	0.189	0.189	$6,658	$6,658
Hospital Admits, Cardiovascular **	0.201	0.201	$10,267	$10,267
Acute Bronchitis	1.360	1.360	$839	$839
Upper Respiratory Symptoms	24.632	24.632	$1,052	$1,052
Lower Respiratory Symptoms	17.298	17.298	$467	$467
Emergency Room Visits, Asthma	0.500	0.500	$282	$282
Asthma Exacerbation	24.970	24.970	$1,853	$1,853
Minor Restricted Activity Days	648.830	648.830	$56,880	$56,880
Work Loss Days	109.545	109.545	$21,929	$21,929
Total Health Effects			**$11,933,656**	**$26,912,849**

* The Low and High values represent differences in the methods used to estimate some of the health impacts in COBRA. For example, high and low results for avoided premature mortality are based on two different epidemiological studies of the impacts of $PM_{2.5}$ on mortality in the United States.

** Except heart attacks.

COBRA Web – 100 MW Solar: Step 3B



Some Other Available Metrics:

- Total Health Benefits ($, high/Low estimates)
- Scenario PM2.5 Concentrations
- Baseline PM2.5 Concentrations
- Mortality data (multiple factors)
- Hospitalizations (multiple factors)
- Illnesses (respiratory, cardiovascular)
- Work loss days ($, cases)

How are COBRA & BenMAP Similar?

They use the same:

- approach to estimate health impacts
- default concentration-response functions
- Economic valuation functions for their calculations

COBRA & BenMAP Differences

COBRA

- Built-in reduced form air quality model
- Forecasts for 2016, 2023, 2028
- County level PM2.5 changes

BenMAP

- Uses stand-alone air quality models (CMAQ)
- Analyzes Ozone and PM2.5
- Analyze health impacts at a finer scale
- Pre-loaded population and baseline health incident data
- Forecasts all years out to 2050

Using COBRA with AVERT

AVERT Model estimates the reduction in air pollution emissions and greenhouse gases associated with energy efficiency, wind, and solar projects. (AVoided Emissions and geneRation Tool (AVERT) | US EPA)

- Provides county level data
- AVERT data can be imported into either COBRA Version

Questions

References

COBRA Main Website:

- CO-Benefits Risk Assessment Health Impacts Screening and Mapping Tool (COBRA) | US EPA

Documentation:

- Assessing the Economic Impacts of Clean Energy (epa.gov)

Videos and Webinars

- Learn About COBRA Video: Learn About COBRA (2:17 min)
- Estimating the Public Health Benefits of Clean Energy: Using EPA's COBRA Web Edition and Public Health Benefits per kWh Values Webinar | US EPA

Citations

- Co-Benefits Risk Assessment (COBRA) Health Impacts Screening and Mapping Tool: How COBRA Works (epa.gov)

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Break

Please mute your microphone and turn off your camera during break.

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Jesse Harlow

Roger Doherty

Naomi Simpson

MIRPP & Filing Requirements Discussion – Misc Topics

MPSC

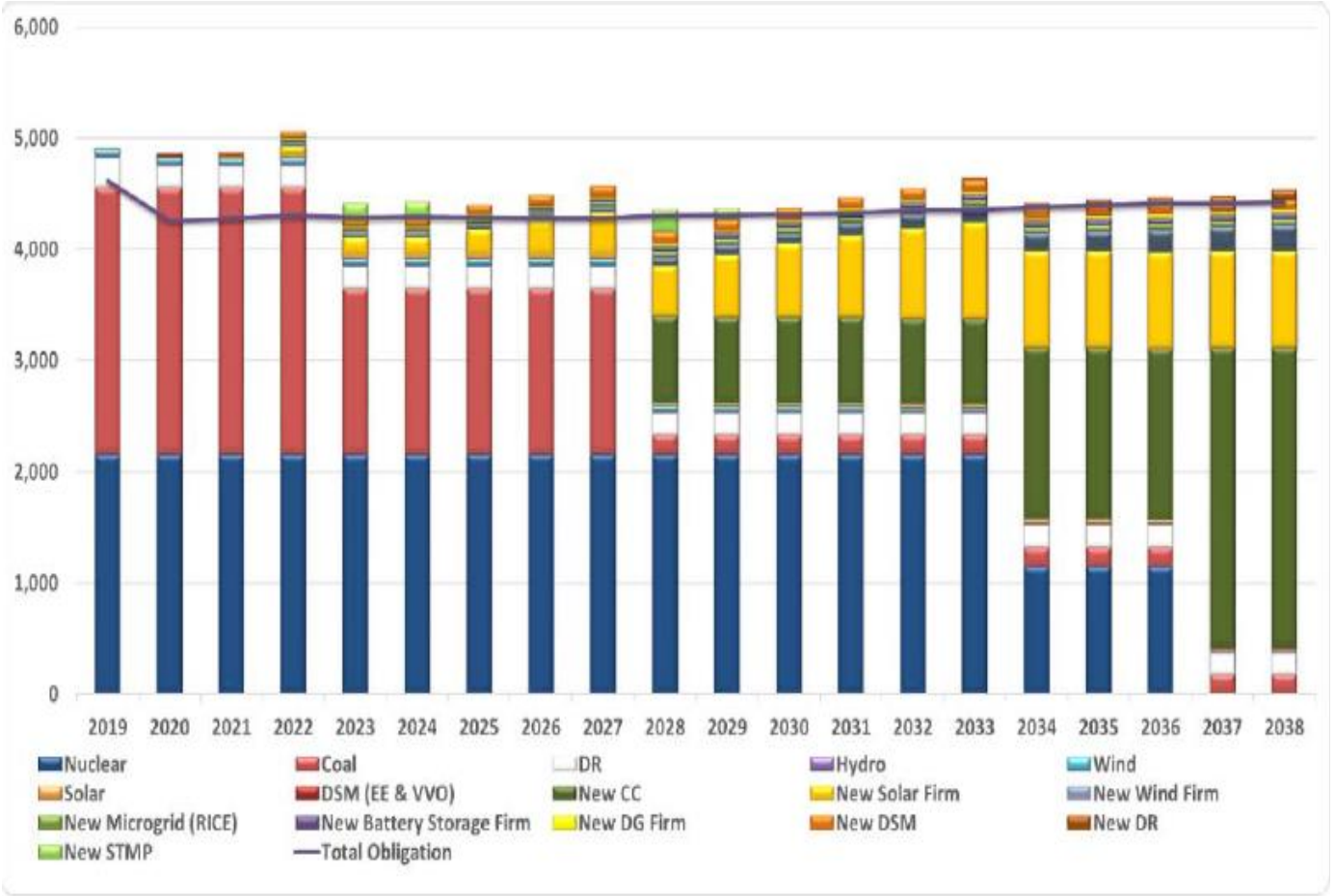
Michigan Public Service Commission

New and Existing Resources Graph

Staff proposes the addition of a *New and Existing Resources Graph* as shown here.

Staff proposed addition:
Section I) Executive Summary &
Section XIX) Exhibits and Workpapers

The Company shall include an exhibit that depicts a stacked bar chart that includes all existing resources and proposed resources, color designated by resource type, in each of the planning years. The graph shall have a line representing expected demand over the length of the planning period with the inclusion of the necessary planning reserve margin.



Carbon Accounting - EPRI GHG Accounting Methods

- **Narrow facility-based approach**
  - Accounts for GHG emissions of facilities owned and operated by the utility, but excludes emissions associated with power purchases.
- **Simplified portfolio approach**
  - Accounts for emissions of resources owned and operated by the utility, as well as emissions associated with net wholesale electricity purchases using a system-average emission rate based on all resources on the grid.
- **Specified portfolio approach**
  - Accounts for GHG emissions of resources owned and operated by the utility, and any specified wholesale electricity procurement, plus emissions associated with net wholesale purchases using the system-average emission rate.
- **Annual net-short approach**
  - Accounts for GHG emissions associated with non-dispatchable resources owned and contracted by the utility, and emissions associated with net system power purchases attributed using a residual system emission rate.
- **Hourly net-short approach**
  - Similar to the annual net-short approach, but utilizes hourly residual system emission rates.

*Electric Power Research Institute, Methods to account for Greenhouse Gas Emissions Embedded in Wholesale Power Purchases, https://ghginstitute.org/wp-content/uploads/2019/04/EPRI-Wholesale-Power-Report-Published-2019.pdf, March 2019, p. 6-1.

Carbon Accounting – Proposed Filing Rqmt.

XVIII Environmental Considerations and Environmental Justice, Subsection e:

- Include a chart that compares the total projected carbon emissions under each scenario and sensitivity analyzed, including quantifying the carbon emissions projected in each sensitivity as a percentage of the carbon emissions presented in the base scenario associated with that sensitivity. The utility shall identify and justify its use of a carbon counting methodology identified in Electric Power Research Institute, Methods to account for Greenhouse Gas Emissions Embedded in Wholesale Power Purchases, https://ghginstitute.org/wp-content/uploads/2019/04/EPRI-Wholesale-Power-Report-Published-2019.pdf, March 2019.

Analyzing Financing Options

Stakeholder Feedback:

When considering retirement of a generator earlier than is assumed in current depreciation rates, it is not correct that (as commonly assumed) a change in retirement date has no effect on required revenue because it is a sunk cost. There are four options for financing the net book value, three of which have an effect on required revenue and each of which should be evaluated in the IRP:

1. Conversion to a regulatory asset that will be depreciated and provide earnings on the undepreciated balance over the same period as the original depreciation schedule. This option does not change net present value of revenue requirements, but all other options reduce net present value of revenue requirements.
2. Accelerated depreciation based on the new retirement date.
3. Securitization of net book value at the time of retirement.
4. Immediate securitization of projected net book value at the new retirement date.

Because options 2, 3, and 4 reduce net present value of revenue requirements, consideration of these options can affect retirement decisions. Of course, the retirement analysis should also consider the effects of earlier financing of decommissioning costs and of avoided operations and maintenance costs.

Analyzing Financing Options – Proposed Filing Rqmt.

Under XVII Rate Impact and Financial Information:

If the utility is proposing retirement of generation facilities that are expected to have an undepreciated book value at the time of retirement, the utility shall include an analysis of various financing options for the remaining book balance and identify the impact the different financing options have on the net present value revenue requirement of the proposed resource plan. The analysis shall include options such as but not limited to:

a. Depreciation of the undepreciated balance over the original depreciable life.
b. Accelerated depreciation based upon the newly proposed retirement date.
c. Securitization of the net book value.

Seasonal Construct

Stakeholder Feedback:

Paraphrasing, if a winter or seasonal model is not currently part of the discussions then it should be added.

1. Concerns about renewable generation and load mismatch that is likely worse in winter as EVs and electric HVAC are implemented if renewables develop to be the primary source of Michigan's electricity.
2. Suggestion for a winter peaking model at the point that renewables are a significant part of the generation mix.

Staff initial thoughts:

1. MISO seems to be moving to a seasonal construct.
2. Staff believes that current models are sophisticated enough to solve for all hours and allow for the incorporation of seasonal changes to generation profiles, load, and demand. *Looking to stakeholders to confirm.*

Seasonal Construct – Proposed Filing Requirement

Proposed Addition to IV) Analytical Approach:

> The utility shall describe and identify how its model approach optimizes resources to meet load and demand for all times of the year and for each year of the planning horizon. The utility shall explain how the model considers the seasonal and operational characteristics of all resource types including monthly generation profiles, forced outage rates, derates, seasonal or limited availability of resources, etc.

Proposed addition to Section X) Capacity and Reliability Requirements (bold language only):

> The utility shall indicate how it complies, and will comply, with all applicable state, federal, ISO, RTO capacity and reliability regulations, laws, rules and requirements, (such as planning reserve margins, system reliability, and ancillary service requirements) including the projected costs/revenues of complying with those regulations, laws, and rules. **The utility shall identify any changes to the applicable state, federal, ISO, RTO capacity and reliability regulations, laws rules and requirements and identify how its proposed resource plan satisfies those requirements.** The utility shall include data regarding the utility's current generation portfolio, including the age, capacity factor, licensing status, and remaining estimated time of operation for each facility in the portfolio.

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Closing - Stakeholder Feedback Request

Written Feedback Request

Staff encourages all stakeholders to provide written feedback that recaps their feedback during discussion.

Staff would like feedback on the following:

1. Carbon accounting proposed language.
2. Financing option proposed language.
3. Seasonal construct proposed language.
4. Environmental Justice Considerations discussed by EGLE. (Slides 14-19)

Note that if there are suggestions for modified language for any of these proposals, please include the language with your feedback.

Feedback Request

We look forward to your written comments in response to Staff's feedback request. Your participation is critical.

Please submit responses to the stakeholder feedback comments received to Kayla Gibbs by

March 10, 2022, 5pm ET.

GibbsK2@Michigan.gov

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Thank You

Upcoming Advanced Planning Stakeholder Meetings
March 24th 9:00 am – 12:30 pm

Upcoming Environmental Justice in IRP Subgroup Meetings
March 23rd 2:00 pm – 3:30 pm
April 14th 3:00 pm – 4:30 pm