

New Approach for 2017 Nonpoint NEI Development

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Outline

- Origin & proposed 2017 Nonpoint inventory development process
- Wagon Wheel (WW) & non-WW components to Nonpoint inventory
- 2017 Nonpoint NEI approach
 - 3+ step staggered schedule
 - Goals vs. reality of WW module development
 - 2017 timeline vs 2014
 - New Nonpoint Survey and options for SLT submittals
- Way too-early summary of pain points and successes
- The future, 2020 NEI and beyond



Origin: Nonpoint LEAN Event November 2016

- Previous Nonpoint NEI Development Process was not tenable
- Multiple versions of tools, each in its own program
- Not holding to milestones
- Lacking consistent, timely and robust methodology documentation
- Lack of State/Local/Tribe (SLT) inputs
- Lack of SLT review time
- Crude and hard to interpret Nonpoint Survey
- Resulted in multiple 2014 Nonpoint "Final" versions
- Late documentation
- Looming question: What is more important, a timely or most-usable/quality Nonpoint inventory?

Proposed Solutions for 2017 NEI

- Early coordination and buy-in on methods and implementation
 - 2017 NEI Plan w/ clear and realistic milestones
 - Robust Nonpoint Emissions Methodology and Operation instructions (NEMO) for each EPA nonpoint tool
- Streamline communications
 - SharePoint organized & simplified Nonpoint Survey
 - Continued Nonpoint Method Advisory (NOMAD) committee monthly calls and additional webinars on tools
 - Regular updates, monthly Skype meetings, recorded trainings
- Streamline the Inventory Development Process
 - Centralized database tool for as many nonpoint processes as possible → Wagon Wheel
 - Utilize activity and other tool inputs from SLTs
 - Providing formats, schedule and Quality Assurance (QA) procedures

Implemented Process Changes for 2017 NEI

- An earlier “final” Nonpoint NEI
 - We planned an approximate 6-month delay in “version 1” public release because this should be the final nonpoint NEI
 - Other data categories available in EIS earlier
- EPA runs final version of WW tool
 - Version control/tracking and resources are saved
 - SLTs can also run tools to “test” assumptions and updated activity data
 - Steps for SLTs to load their inputs and run WW not provided

Wagon Wheel

- Central Microsoft® Access® database
- Uses single interface for multiple source categories/tools/modules
 - Emission factors
 - Emissions Inventory System (EIS) codes: state-county (FIPS) codes, SCCs, pollutants
 - Activity data: e.g., State Energy Data System (SEDS), County Business Patterns, Point-Nonpoint SCC cross-walk
- SLTs can modify activity data and assumptions
 - Input Templates provided by tool and also for “centralized” data
 - SLTs can review default inputs and if desired, selectively add their own
 - SLT inputs become absorbed in WW for NEI
- NEMOs accompany Input Templates and WW



Wagon Wheel Categories

Category 1

- Ag Pesticides
- Ag Tilling
- Asphalt Paving
- Av Gas Distribution I & II
- Composting
- Construction Dust
- Mining & Quarrying
- Open Burning Residential Household Waste
- Open Burning Leaf & Brush Yard Waste
- Residential Charcoal Grilling
- Residential Construction Dust
- Residential Non-wood Heating
- Road Construction Dust

Category 2A

- Commercial Cooking
- Human & Animal Cremation
- Landfills (working-face Hg)
- Other Nonpoint Hg

Category 2B

- Ag Animal Dust
- Open Burning Land Clearing Debris
- Road Dust

Category 3

- Industrial & Commercial/Institutional (ICI) Fuel Combustion
- Publicly-Owned Treatment Works (POTWs)
- Residential Wood Combustion (RWC)
- Solvents
- Stage I Gas Distribution

Non-Wagon Wheel Categories

- Development schedule is sector-specific (not Category 1, 2 or 3)
- Separate Tools
 - Oil & Gas Production and Exploration
- Stand-alone EPA datasets
 - Agricultural livestock waste
 - Agricultural fertilizer application
 - Agricultural field burning
 - Biogenics
 - In-flight aircraft (Pb only)
 - Portable fuel containers
 - Commercial marine vessels
 - Locomotives

3-Track Staggered-Schedule Approach: Category 1



- WW tools with minimal or no methodology changes
- No point inventory reconciliation
- Do not update activity until year-2017 is available
- Source categories generally regarded as in “good shape”, or not considered high-priority based on stakeholder feedback
- Goal for NEMOs and SLT-reviewed Input Templates
 - April 30, 2018
- Reality
 - NEMOS: Feb - May 2018
 - Reviewed Input Templates: June 2018 –some modified since

3-Track Staggered-Schedule Approach: Category 2



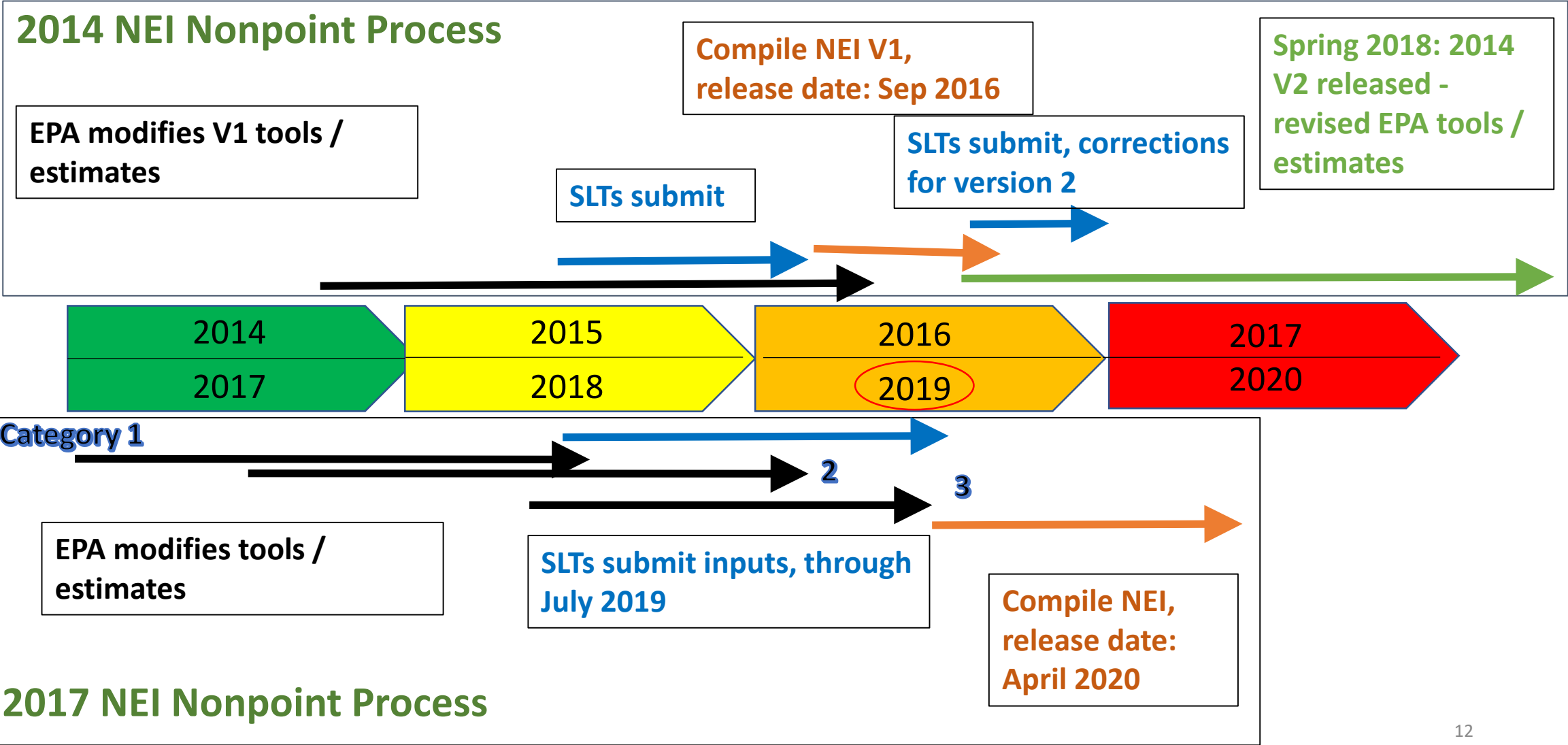
- Significant method changes and no point subtraction
 - No point reconciliation
 - Collaboration needed to discuss tool improvements
 - Eventually split into “2a” and “2b” tools because of shutdown/resources issues
- Goal for NEMOs and SLT-reviewed Input Templates
 - Category 2a: 12/31/2018
 - Category 2b: 3/15/2019
- Reality
 - NEMOS: 9/20/2018 (2a), 12/4/2018 (2b)
 - Reviewed Input Templates: December 2018 – March 2019
- Note: As of mid-June 2019, most Category 1 & 2 Input Templates have been updated with latest available default activity data

3-Track Staggered-Schedule Approach: Category 3



- Point source subtraction needed –except for RWC
 - Emissions for most Cat-3 tools
 - Throughput (activity) data for ICI tool
- Varying degrees of methodology changes
 - Significant: ICI, RWC
 - Limited: solvents, gasoline distribution stage 1, POTWs
- Goal for NEMOs and SLT-reviewed Input Templates
 - Draft versions: 2/28/2019
 - SLT-reviewed input templates and NEMOs: 6/30/2019
- Reality
 - Draft versions: May - June 2019
 - SLT-reviewed input templates and NEMOs: June 2019
- Note: Plan is to post final Cat-3 tools and estimates –reflecting SLT-submitted inputs (including point data) by 8/31/2019

Snapshot of 2017 vs 2014 Nonpoint Timelines



Screenshot of Wagon Wheel Tool

The screenshot displays the Wagon Wheel Tool interface, which is divided into two main sections: the Home Screen and the Control Panel.

Home Screen:

- Header: **WAGON WHEEL**
- Image: A pixelated illustration of a white dog pulling a wagon with two wheels.
- Status: **DRAFT**, Last updated July 9, 2019
- Description: Web-like Algorithm for the Generation Of Nonpoint inventories With Helpful Emissions Estimation Logic
- Buttons: **Get Started** and **Tool Change Log**

Control Panel:

- Header: **WAGON WHEEL**
- Instructions: Select the states, tools, and pollutant types to include in the emissions estimation output table.
- Options:
 - CAPs
 - HAPs
- Buttons: **Home Screen**, **Edit Assumptions**, and **Run Tool**

State Selection Table:

State	Select
Pennsylvania	<input type="checkbox"/>
Puerto Rico	<input type="checkbox"/>
Rhode Island	<input type="checkbox"/>
South Carolina	<input type="checkbox"/>
South Dakota	<input type="checkbox"/>
Tennessee	<input type="checkbox"/>
Texas	<input checked="" type="checkbox"/>
Utah	<input type="checkbox"/>
Virginia	<input type="checkbox"/>
Virgin Islands	<input type="checkbox"/>
Vermont	<input type="checkbox"/>
Washington	<input type="checkbox"/>
Wisconsin	<input type="checkbox"/>
West Virginia	<input type="checkbox"/>

Tool Selection Table:

Tool	Select
Gasoline Distribution (Stage 1)	<input type="checkbox"/>
ICI	<input type="checkbox"/>
Landfills	<input type="checkbox"/>
Mining and Quarrying	<input type="checkbox"/>
Open Burning	<input type="checkbox"/>
Other Mercury	<input type="checkbox"/>
POTWs	<input type="checkbox"/>
Residential Grilling	<input checked="" type="checkbox"/>
Residential Heating	<input checked="" type="checkbox"/>
Residential Wood Combustion	<input checked="" type="checkbox"/>
Road Dust	<input checked="" type="checkbox"/>
Solvents	<input type="checkbox"/>

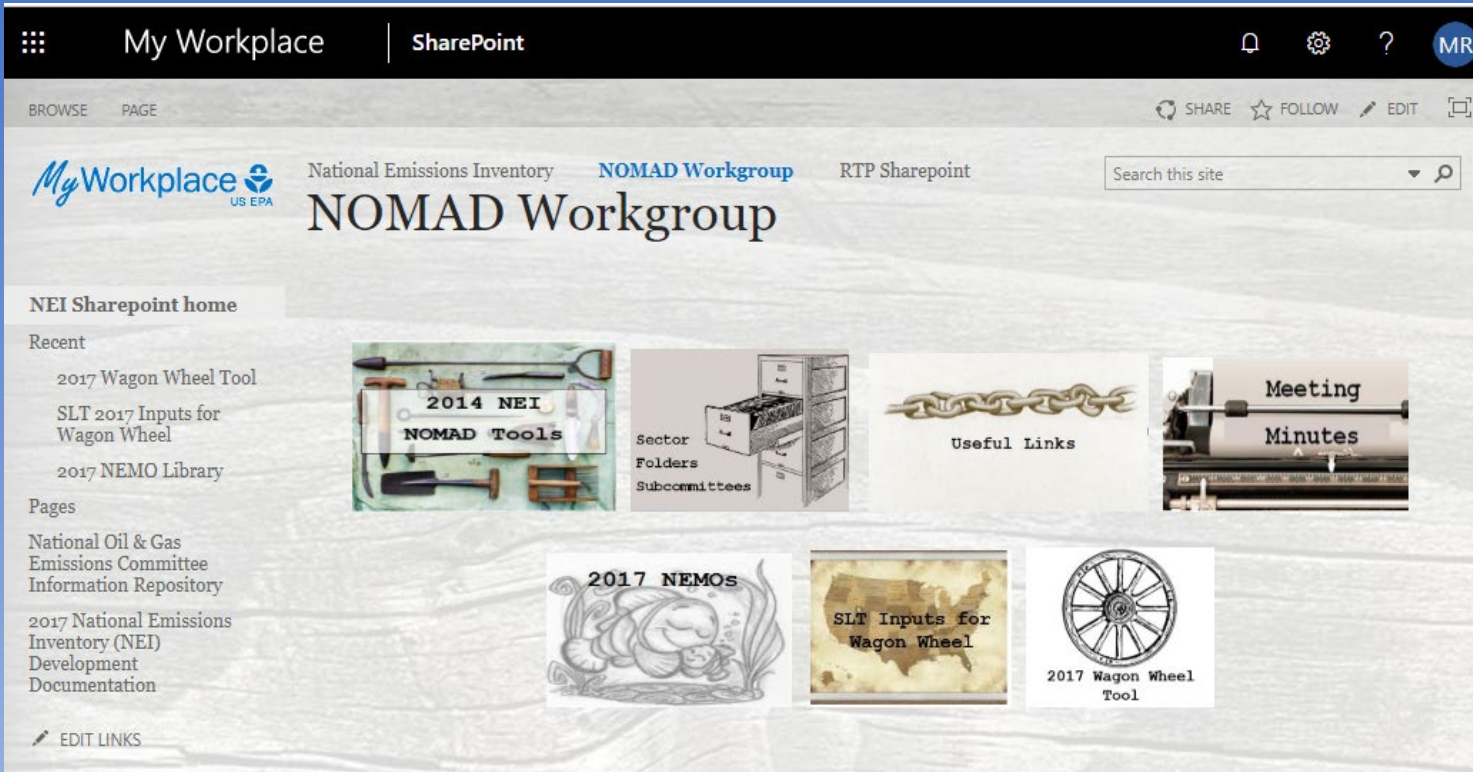
Input Template

Document Source	
Prepared by Abt Associates, Inc. (Abt) for U.S. Environmental Protection Agency	
Contract #	EP-BPA-17-H-0012
EPA Task Order Contracting Officer Representative	Rich Mason U.S. Environmental Protection Agency (919) 541-3405 Mason.Rich@epa.gov
Abt Project Manager	Jonathan Dorn Abt Associates, Inc. (919) 294-7753 Jonathan_Dorn@abtassoc.com
Name of Person Completing the Template	
State	
Agency/Organization	
Date	
Notes/Comments	
Instructions	
<p>Each worksheet in this workbook contains a different table of data or assumptions used in the Wagon Wheel Central Database. The data in these input templates are used in the Wagon Wheel Central Database to estimate nonpoint emissions from various sources. Rather than submitting emissions, SLT agencies may submit revised data or assumptions to EPA using these templates and EPA will generate emissions using the revised data. The table below explains the data and assumptions in each worksheet and lists the source of the default data. Please note that EPA will update the default data as new data become available from the source. Therefore, please do not submit updated data from the same source as the default data. These templates are meant to give SLT agencies an opportunity to submit data from other sources, such as state-level databases. For more information about any of the default data and how they are used in the tool, please consult the Wagon Wheel Operator Instructions.</p> <p>Data may only be entered in the yellow cells in each worksheet. Please pay attention to the units listed for each data point. Note that in some worksheets, if the user adds data that are different from the default data by a factor of 10 or more, the cell will turn red as a warning to the user. This is only meant as a warning to ensure the data are entered correctly.</p>	
<p>Overview EFs County Population County Urban-Rural Population Rural Land Fraction County Silt Content</p>	

Document Summary		
Date	07/08/2019	
Version	1.5	
Description	Wagon Wheel Central Database Input Templates	
Worksheet	Description	
Overview	Provides summary information about this workbook.	N/A
EFs	This worksheet contains the emissions factors for all nonpoint source emissions categories.	See Wagon Wheel Operator Instructions
County Population	This worksheet contains county-level population data for 2017.	US Census Bureau
County Urban-Rural Population	This worksheet contains county-level population data from the 2010 census used to determine the fraction of urban and rural population in each county.	US Census Bureau
Rural Land Fraction	This worksheet contains county-level rural and urban land fractions used in open burning categories	US Census Bureau
County Silt Content	This worksheet contains county-level data on silt content used in the dust tools.	USDA
SEDS	This worksheet contains state-level data on fuel usage, by fuel type, used in the Residential Heating, Aviation Gas, and ICI Tools.	EIA, State Energy Data System
Coal Distribution Ratio	This worksheet contains state-level ratios used to split coal data into anthracite and bituminous coal use in the Residential Heating and ICI Tools.	EIA, 2012
Sulfur and Ash Content of Fuels	This worksheet contains county-level data on sulfur and ash content of fuels used to calculate SO ₂ and PM emissions factors in the Residential Heating and ICI Tools.	See Residential Heating and ICI Tool INELMIS

Document Change History		
Version	Delivery Date	Changes
1.0	01/12/2018	Initial draft of document.
1.1	05/10/2019	Updated with latest activity data. Added emissions factors for Bin 2 and 3 tools.
1.2	06/09/2019	Added emissions factors for Stage I Gasoline Distribution.
1.3	06/17/2019	Added emissions factors for Residential Wood Combustion.
1.4	06/21/2019	Updated emissions factor for Solvents - Dry Cleaning with latest data from Freedonia.
1.5	07/08/2019	Added emissions factor for tetrachloroethylen (perc) for Solvents - Dry Cleaning. Corrected minor error for units for natural gas consumption in SEDS sheet; units should be EBFT3.

Critical: Overview sheet information, necessary to ensure edits (over-ride EPA default data) are confined to the SLT submitting the template



Screenshot of NOMAD SharePoint Site

- Sector Folder Subcommittees
 - Repository for data analysis products and/or draft data for each tool/sector (e.g., ICI, Ag Burning)
 - Year 2017 and 2014 sub-folders
- Meeting Minutes
 - NOMAD Skype call notes and recordings
- 2017 NEMOs
 - NEMOs, references, and SLT comments on draft NEMOs
 - Broken out into “Bins” (Categories)
- SLT Inputs for Wagon Wheel: key working folder for SLTs with following subfolders:
 - Blank templates for download
 - SLT-completed (and renamed) templates that will be loaded into final WW
 - Miscellaneous inputs that are not WW input templates
- 2017 Wagon Wheel Tool
 - Current version of the WW and archive versions

New Nonpoint Selection Process: Option Group/ Option Set (OGOS)

- In SCC reference table, used to prevent potential double-counting when blending EPA and SLT submittals into NEI: issue of “general” vs. more-specific SCC processes
- Less EPA and SLT data tagging
- OGOS example
 - EPA calculates numerous fugitive processes (connectors, flanges, valves, etc)
 - SLT submits “all processes”
 - Only SLT (higher-ranking in selection hierarchy) data will be selected in NEI
- Refer to Appendices 4 & 6 in the [2017 NEI Plan](#)



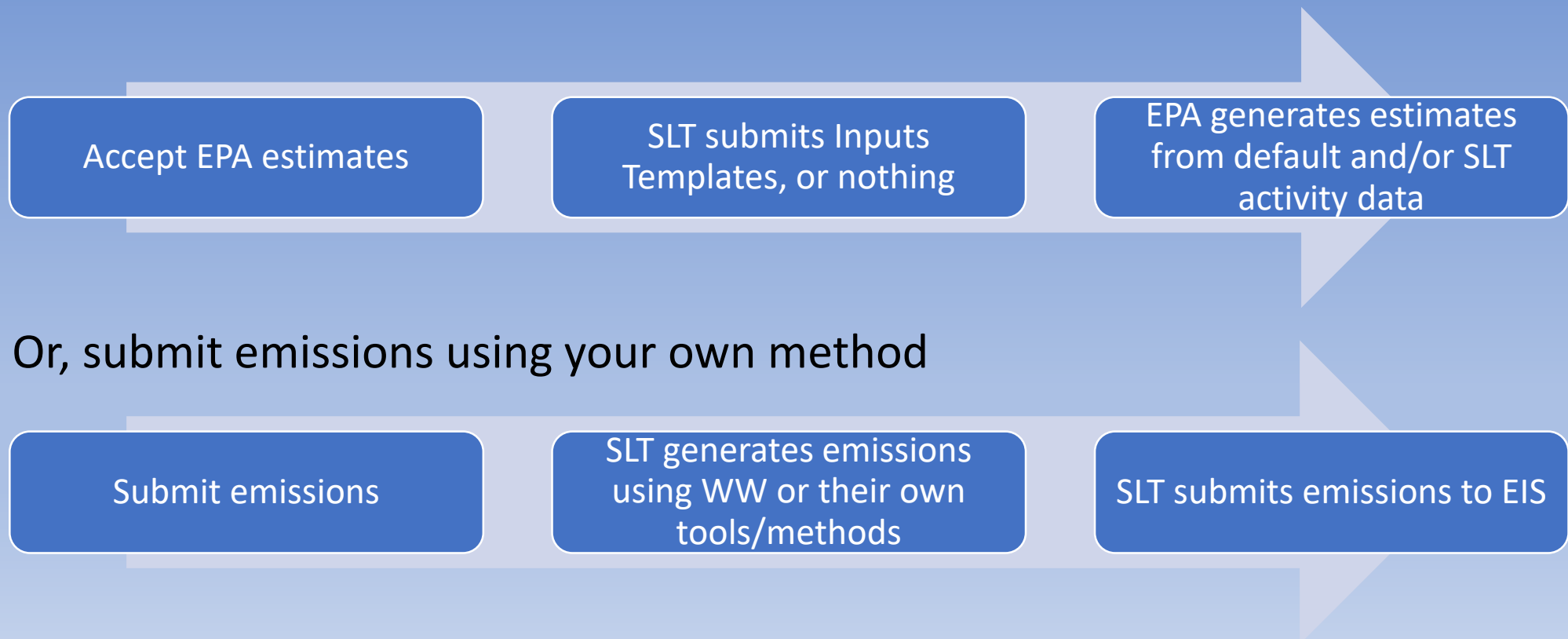
New Nonpoint Survey

- First introduced for the 2014 NEI, has been streamlined for the 2017 NEI
- Rely on SLT inventory submitters for each Nonpoint source grouping/SCC to indicate
 - Yes, supplement with EPA data
 - No:
 - I do not have this source
 - It is included in my point inventory
 - My agency uses different SCCs
 - My inventory is complete; it does not need to be supplemented
 - Yes, but, supplement only for missing pollutants at my reported counties or Tribe

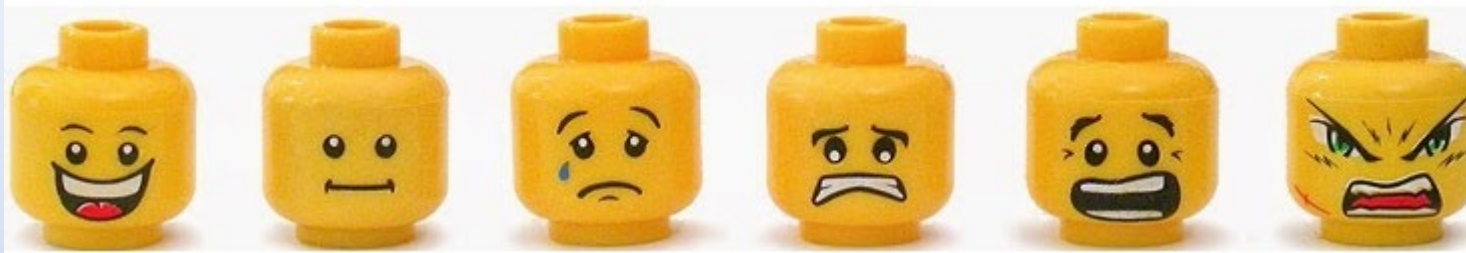


Options for Submitting Data to NEI

- Business rules are laid out in the [2017 NEI Plan](#) and Addendum
- Regardless of option, must complete the Nonpoint Survey, then:
 - Submit Input Templates for Categories in Wagon Wheel via SharePoint



Pain Points in New 2017 Development Process



- Timeliness: uncontrollable
 - Initial resources needed earlier + government shutdown (esp. RWC)
 - Final activity data, including vehicle miles traveled & point from SLTs, do not mesh with existing reporting rule deadlines
 - Resulting resource planning challenges for several agencies: new deadlines
- Timeliness: more-controllable
 - Late comments, review, errors identified caused > 1 round planned review
 - Earlier SLT review/feedback on NEI Plan, NOMAD notes, tools needed
 - Draft emissions not provided with draft NEMOs and templates
 - Lack of 1-stop doc “how-to” instructions for SLT submittal and QA until recently
- Limitations & steep learning curve (EPA & SLTs) for the process
 - SharePoint process: checking out blank templates, upload with overview info
 - Lack of ability for SLTs to “test” WW with their inputs

Notable Successes in New 2017 Development Process

- Communication
 - Earlier engagement between SLTs and EPA
 - Feedback from mass-emails, recorded NOMAD Skype meetings
- Improved transparency
 - Earlier release of proposed methodologies (NEMOs)
 - Provided much of default activity data before submittal deadline (Input Templates)
 - Many sector estimates/documentation done earlier this cycle
 - Ability to review SLT-submitted comments and inputs before submittal deadline
- Streamlined approach
 - Late-arriving activity data more easily absorbed thanks to WW
 - Version tracking via templates and WW

Next Steps: 2020 NEI and beyond

- Evaluate as a large group, the pros/cons of the new Nonpoint process
- Work more with ORD to develop and leverage testing programs to support inventory development
- Work with SLTs and others on identifying key sectors for improvement
 - Missing sources that need methods: e.g., ag silage
 - Discuss which existing tools deemed not suitable to SLTs for 2017 (e.g., ICI, RWC, Solvents for some)
 - Improve understanding of agricultural livestock model code
 - Emission factor work
- Web-based pilot for a sector → test prior to 2020 NEI (resources permitting)
 - Work to absorb much of Wagon Wheel/Input Templates directly into EIS
- Absorb, document and greatly-refine components of PM Augmentation Tool into EIS
 - Use similar pollutant-ratio approach already in place (e.g., HAP augmentation from CAPs)
 - Obtain references for all SCC mappings, with and without controls
 - Create easy-to-read PM component factors by SCC, much like HAP augmentation

2017 Nonpoint NEI Resources

- Numerous online [Air Emissions Inventory Training](#) courses
 - New [Wagon Wheel](#) Approach
 - New [Nonpoint Survey](#)
 - New [Nonpoint NEI Process and QA](#)
- [2017 NEI Plan and Addendum](#)
- [NOMAD SharePoint site](#)
- Recent “[Cheat Sheet](#)” for SLT submittal development
- Periodic (every 2-4 weeks) email updates on NEI development

Nonpoint: Points of Contact

Rich Mason

Ag Tilling

Biogenics

Construction Dust

Human & Animal
Cremation

ICI Fuel Combustion

Mercury, including
working-face
landfills

Mining & Quarrying

PFCs

Residential non-
wood Heating

Residential Wood
Combustion

Jennifer Snyder

Ag Pesticides

Asphalt Paving

Av Gas Distribution
Stage I & II

Backyard BBQs

Commercial
Cooking

Composting

Oil & Gas

Open Burning

POTWs

Stage I Gasoline
Distribution

Solvents

Tesh Rao

Ag Fertilizer

Ag Field Burning

Ag Livestock Waste

Joe Mangino

Dust from Animal
hooves/feet

Road Dust

Laurel Driver

CMV

Locomotives

In-flight Aircraft
(Pb)

Wagon Wheel Source

Non-Wagon Wheel
Source

Questions?

