Comments from Jared Bowden, NC State University, dated 01/24/2018				
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1	13	The WRF simulation will be initialized with the 12-km (Grid #218) North American Model (NAM) archives available from the National Climatic Data Center (NCDC) National Operational Model Archive and Distribution System (NOMADS) server.	I would suggest consider using also SNODAS for Snow Input rather than NAM. It will provide a better estimate of snow cover and snow water equivalent, especially since going down to <4km.	After exploring how to get SNODAS into the WRF initialization files, we opted to stay with NAM. The EPA and UNC researchers who developed the SNODAS processing scripts for WRF indicated that a recent change to the SNODAS file format broke their scripts. As we don't have the time or expertise to redevelop these scripts at LADCO, we will move forward with NAM.
2	14	The sea surface temperature (SST) data will be taken from the National Centers for Environmental Prediction (NCEP) Real Time Global (RTG) global one-twelfth degree analysis. The daily SST fields will be orderly ingested from the RTG Global datasets into the WRF model surface boundary files by utilizing the WRF Preprocessing System.	Consider using 1km GHRSST; likely a big deal for domain of interest and resolution considering I believe can get from here: https://data.nodc.noaa.gov/ghrsst/L4/GLOB/JPL/MUR/	The protocol was updated to use 1km GHRSST for SST and includes a discussion on the methodology for integrating GHRSST in the WRF simulation.
3	14	We will use an analysis nudging coefficient of $3x10^{-4}$ s^{-1} for horizontal winds and temperature and an analysis nudging coefficient of $1.0x10^{-5}$ s^{-1} for water vapor mixing ratio.	Consider reducing the nudging for 4-km domain; also note that for EMAQ 12-km conus domain we used 1x10^-4 for winds and temperature; Overall, my experiences with analysis nudging is that as you go to finer resolution than the input data (12km NAM); need to reduce the nudging coefficients.	Suggestion has taken. Revised the nudging coefficients specific to each domains.
4	14	Observational nudging will be	I have mixed feelings about observational nudging;	Removed observational nudging texts from

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		used in the 4-km domain for winds and temperature using coefficients of $2.5x10^{-4}$ s^{-1} and $1.0x10^{-4}$ s^{-1}, respectively.	My overall thought is that if you decide to use then need to find a way to compare with other observations besides MADIS. Some analysis before indicated that giving some false sense that the model is performing better.	the protocol as to avoid a potential false indication of the model performance and to use MADIS observations for model performance verification.
5	14	No nudging will be used within the PBL.	Need to move this up with discussion about analysis nudging. Observational nudging is different and you are nudging at the surface.	Addressed in the protocol.

Comments from Brad Pierce, NOAA, dated 1/19/2018				
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3	17	Table 4-3, column LMOS 2017	Correct modeling specifications for the LMOS 2017 studies: – LMOS 2017 EPA Baseline configuration, YSU/MYJ PBL and NOAH LSM schemes also evaluated – 0.5º GFS was used as ICBC	Done
5	21	Table 5-1. Meteorological model performance benchmarks for simple and complex conditions.	EPA Baseline configuration shows 0.740 and 0.289K Bias for Lake Michigan Coastal sites at 12 and 4km resolution during the period from May 21-June 4, 2017. YSU-NOAH-Thompson showed best overall temperature results with -0.157 and 0.131K Bias at 12 and 4km resolutions. The EPA baseline configuration shows high biases in wind speed of ~1.4m/s for both 12 and 4km resolution, MYJ-NOAH shows largest high bias of	Model performance can vary by simulation year. If we discover the 2016 WRF modeling configuration (Table 4-2) did not produce adequate meteorology for air quality regulatory applications, we will consider switching to the YSU-NOAH-Thompson option later.

Comments from Brad Pierce, NOAA, dated 1/19/2018				
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			~2.5m/s, YSU-NOAH shows high biases of ~1.8m/s. All sensitivity experiments showed Direction bias of <10 degrees	

Comments from Chris Misenis, EPAWRF Advisor, dated 01/29/2018				
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1	5	In Section 1.3.3, WI DNR used these data as part of a 2008 O3 NAAQS State Implementation Plan	WI DNR used this [configuration] not only for Sheboygan but for Kenosha nonattainment plan too. Also, Indiana used it for Lake and Porter nonattainment plan. Might be more accurate/all-encompassing to say something like some LADCO states used these data to support attainment demonstration modeling for the 2008 ozone NAAQS and cite the attainment demo at http://www.ladco.org/reports/ozone/post08/LADCO%20Ozone%20TSD%20FINAL%20(Feb%203%202017).pdf since each nonattainment plan submittal contains more SIP elements than just the modeling demo	Section title was changed to "Applications of USEPA WRF Modeling in the LADCO Region ". In the section, suggested edits were included and referenced.
2	10	Table3-2, correct pressure unit	Should this be something other than meters, perhaps mb?	Pressure unit was corrected to Pa.
3	14	FDDA will not be used for the 1.33-km domain.	Rationale? I'm assuming the limited size of the domain would be dominated by the small number of observational points to nudge to within that area?	Corrected the sentence to "FDDA will not be used for the 1.33-km domain due to limited observations available over the Lake Michigan."

Comments from Chris Misenis, EPAWRF Advisor, dated 01/29/2018				
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4	15	No nudging will be used within the PBL.	Redundant	Removed.
5	15	Kain-Fritsch cumulus parameterization in the 12/4-km domains (cu_physics=1)	Using the Trigger 2 convective option or not? EPA usually employs to help dampen some convective feedback issues, but it's not required	Clarified the trigger option by rewording the sentence to "Kain-Fritsch cumulus parameterization with moisture-advection based trigger (trigger option =2) in the 12-km and 4-km domains (cu_physics=1); and no cumulus parameterization (cu_physics=0) in the 1.33-km domain".
6	16	Table **Error! No text of specified style in document.**-1. Comparison of the LADCO 2016 WRF configuration to recent configurations for modeling air quality in the LADCO region	Might be nice to add a column on EPA 2011 WRF configuration for comparison, since this is what was used as the met inputs for the 2008 O3 attainment demo and other recent LADCO SIP modeling	We have limited space in the document to include configuration comparisons. The EPA 2011 WRF configuration is incorporated by reference. No action was taken.
7	17	Section 4.13 WRF Application Methodology	No need to run in 5.5 day chunks if you're using FDDA. Matter of preference, though. EPA no longer reinitializes every 5 days.	We will follow the conventional modeling practice for running WRF in 5.5 day blocks. The primary reason for this study is to leverage computing resources for speeding up the run time.
8	17	Twelve hours of spin-up will be included in each 5.5-day block before the data are used in the subsequent evaluation.	You mean two-way nesting without feedback? One-way nesting already infers no feedback since it's just coarse -> to fine.	Deleted out 'with no-feedback' for clarity.

Comments from Chris Misenis, EPAWRF Advisor, dated 01/29/2018				
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		The model will be run at the 12-km, 4-km, and 1.33-km grid resolution from December 16, 2015 through January 1, 2017 using one-way grid nesting ~~with no feedback~~		
9	19	In addition, separate evaluation will also be conducted at each meteorological modeling station in the 1.33-km domain.	Great! Would it be worth it to do this for the 4 km as well?	Included

Comments from David Brown, Minnesota Pollution Control Agency, dated 01/29/2018				
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1	14	…no nudging done for temperature and mixing ratio in the lower atmosphere (i.e., within the planetary boundary layer).	Tables 4-2 and 4-3 state no nudging will be done in the PBL, however this sentence implies winds will be nudged in the PBL. I agree with the configuration in Table 4-3.	Clarified the protocol text to read: "FDDA will not be used for the 1.33-km domain due to limited observations available over the Lake Michigan"
2	14	Observational nudging will be used in the 4-km domain for winds and temperature using coefficients of 2.5×10^{-4} s^{-1} and 1.0×10^{-4} s^{-1}, respectively	Can both analysis nudging and observational nudging be employed in a single modeling domain? I don't have experience with observational nudging, so I'm unsure. Table 4-2 indicates observational nudging will be applied only to surface temp and winds. If so, it would be helpful to specify that here as well, for consistency.	We will not be using observational nudging for this simulation. Sentence removed from the protocol. Note that you can use obs nudging at the same time as analysis nudging, we're just choosing not use it here.