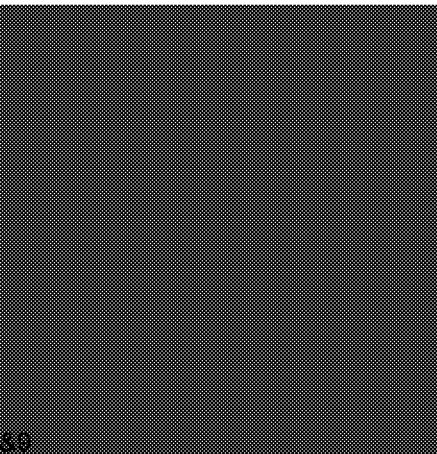
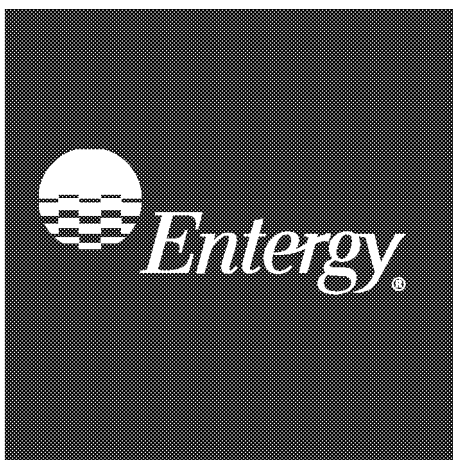
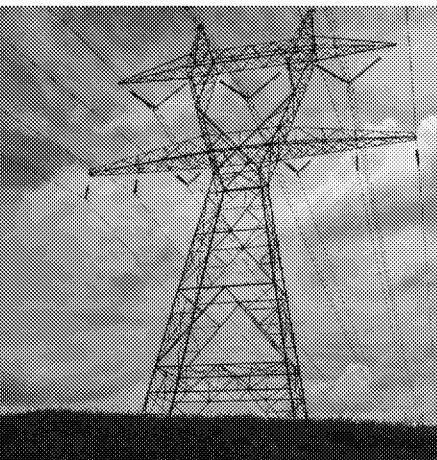
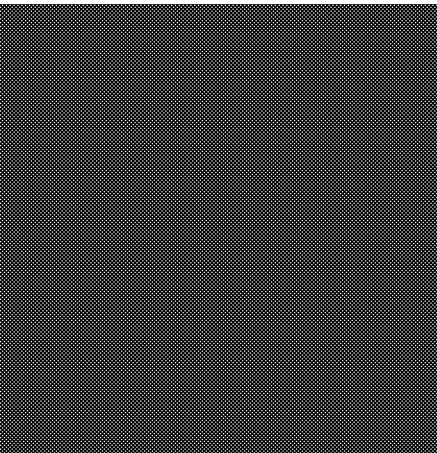


Arkansas Regional Haze Phase II SIP Proposal

**Arkansas Department of
Environmental Quality
December 1, 2017**

WE POWER LIFESM



- Concerns with durability of a SIP approval based on errors in ADEQ's analysis of the five statutory BART factors
 - ADEQ must take into account the remaining useful life of the units – proposed SIP disregards Entergy CTUC date and instead delays it

Unit	Control Option	ADEQ Cost Effectiveness* \$/ton (2030)	ADEQ Implied Cost Effectiveness** \$/ton (2030)
WB1	DFGD	\$5,420	\$4,599
WB2	DFGD	\$5,387	\$4,571

* As proposed in SIP

** CTUC in 2030 and amortization start in 2021

- EAI has identified CTUC date of 2028 for both White Bluff units:
 - Comments on Proposed FIP (8/7/15)
 - Petition for Administrative Reconsideration of FIP (11/23/16)
 - Motion to Stay FIP, 8th Circuit (2/8/17)
 - Opening Merits Brief, 8th Circuit (2/17/17)
 - Updated Five-Factor Analysis (provided as CBI) (8/18/17)

- Proposed SIP conducts an incomplete Q/D analysis and singles out Independence for further evaluation
- Conducting source-specific four-factor analysis is not required for first planning period, is contrary to the state's arguments on the FIP, and could undermine the challenges to the Regional Haze rule revisions
- State may also consider other factors in addition to four factors
 - Not limited to a BART-type analysis
- Entergy's proposed cease-to-use-coal date must be considered in the Long-Term Strategy

- While a source-specific four-factor analysis is not required, the proposal conducts one for Independence and thus explicitly considers cost-effectiveness of controls
 - Proposed SIP disregards proposed CTUC date submitted by Entergy in September 2017, this suggests a 30-year RUL for the units

Unit	Control Option	EPA Cost Effectiveness [†] \$/ton (2030)	ADEQ Implied Cost Effectiveness \$/ton (2051)
IN1	DFGD	\$4,252	\$2,853
IN2	DFGD	\$3,925	\$2,634

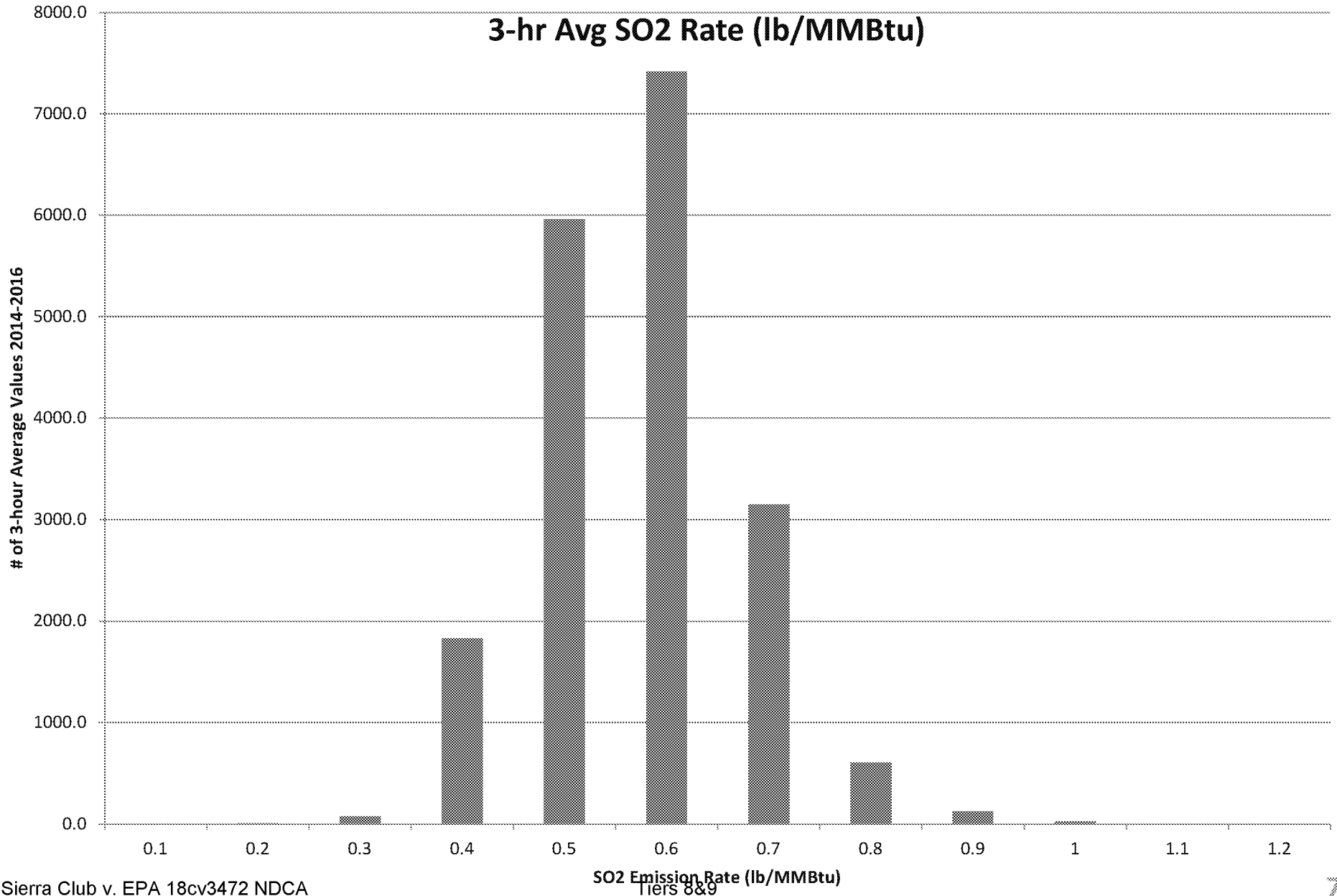
* Artificially low value based on EPA FIP cost estimates

- Proposed SIP compares 30-day average actual SO₂ emission rates to existing 3-hour average permit limits
 - Limits:
 - 1.2 lb/MMBtu (White Bluff)
 - 0.93 lb/MMBtu (Independence)
 - Due to natural variability in coal sulfur content, in order to ensure compliance with applicable short-term (3-hour) limits, Entergy must necessarily achieve long-term (e.g. 30-day) average emission rates well below the applicable short-term limit
 - Proposed SIP draws improper conclusions from this comparison of data with significantly differing averaging times
 - Suggests that plant is currently utilizing low-sulfur coal as an existing control, when actual 3-hour average data indicates maximum emission rates approaching limit

- Example: White Bluff Unit 1
- Data for 2014-2016
- Limit = 1.2 lb SO₂/MMBtu

SO2 Emission Rate (lb/MMBtu)	# of 3-hour Average Values Equal to Given Rate (2014-2016)	Cumulative % of all Values Less than or Equal to Given Rate (2014-2016)
0.1	2.0	0.01%
0.2	8.0	0.05%
0.3	73.0	0.43%
0.4	1829.0	9.96%
0.5	5962.0	41.00%
0.6	7418.0	79.63%
0.7	3151.0	96.04%
0.8	605.0	99.19%
0.9	126.0	99.85%
1	25.0	99.98%
1.1	4.0	100.00%
1.2	0.0	100.00%

Technical Concerns with Proposal



- EPA has published a significant Technical Support Document (TSD) based on revised nationwide CAMx modeling for all Class I areas
- The Sierra Club submitted comments to EPA on the proposed Phase I SIP approval which purportedly show that NOx emissions from White Bluff and Independence contribute to ozone nonattainment in St. Louis

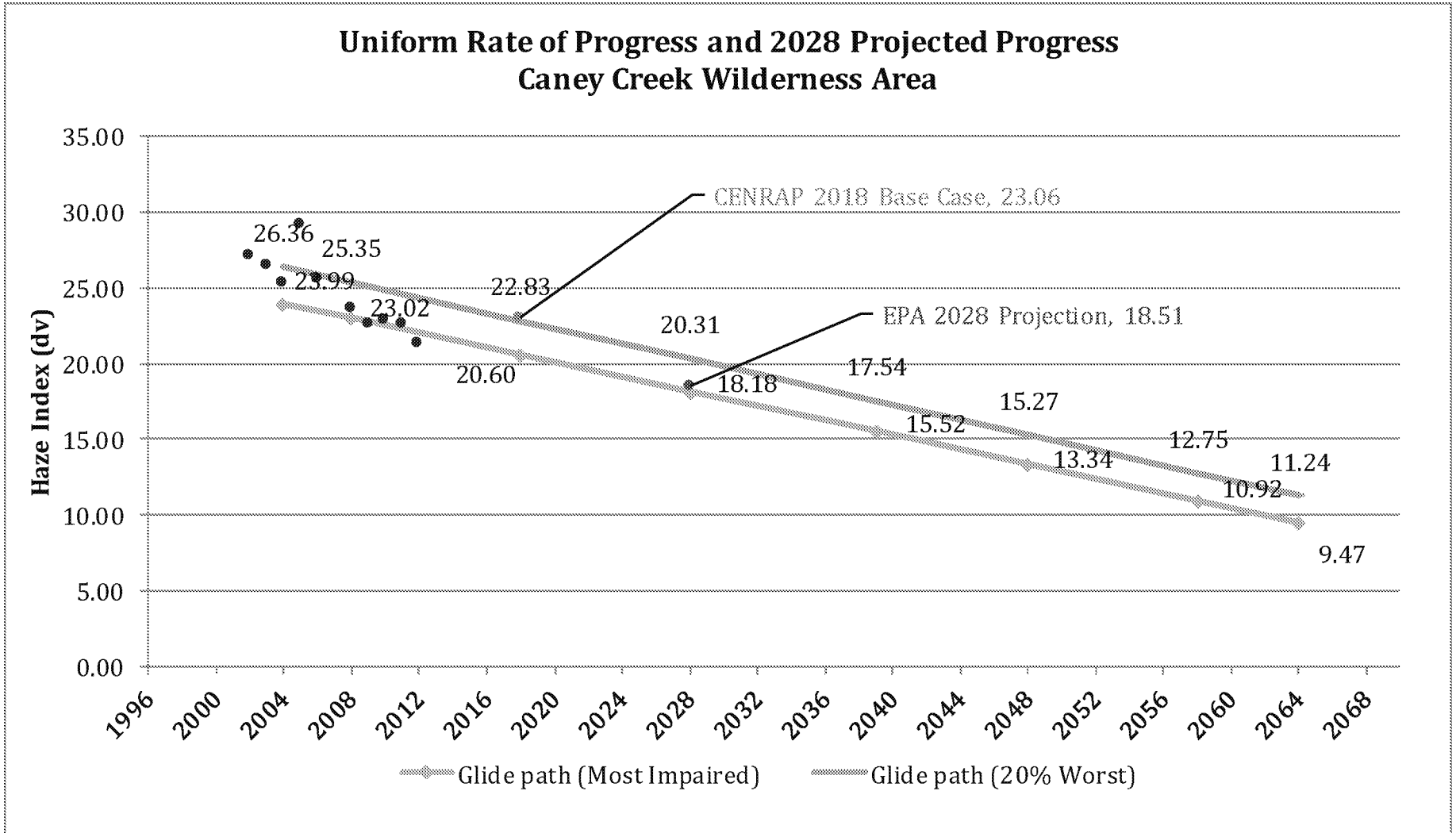
- EPA 2028 Preliminary Modeling
 - EPA conducted preliminary visibility modeling for 2028 (end of second planning period) with intention of informing the regional haze SIP development
 - The modeling predicted 2028 future visibility impairment including domestic anthropogenic, domestic natural, and international anthropogenic and natural sources
 - EPA also conducted source apportionment modeling for multiple source sectors including Biogenic, Fugitive, Agricultural, Marine Vessels, Non-point, On-road and non-road mobile, oil and gas, EGUs, non-EGU point, etc.
- The visibility analysis was conducted using the draft modeling guidance released consistent with the Regional Haze Rule (RHR) revisions, including
 - Use of **most impaired** days vs. the 20% **worst** days in calculation of the predicted 2028 visibility
 - Updates to the glidepath by updating the baseline worst conditions to reflect the 2000-04 most impaired days
 - Updates to the glidepath by updating the 2064 end point to most impaired natural condition

- EPA's modeling predict that the 2028 future visibility impairment at the Caney Creek Wilderness Area and Hercules-Glades will be **above** the "updated" glidepath
- The predicted future visibility impairment for the Upper Buffalo Wilderness area and Mingo will be less than one deciview **below** the updated glidepath in 2028
- The source contribution analysis indicates that for all Class I areas, Electric Generating Units (EGU) sector was the primary **anthropogenic** source contributor followed by non-EGU point source sector
- However, for the Caney Creek and Upper Buffalo wilderness areas, IC\BC was the primary source contributor with contribution significantly higher than the EGU sources

Revised Glidepath for Caney Creek



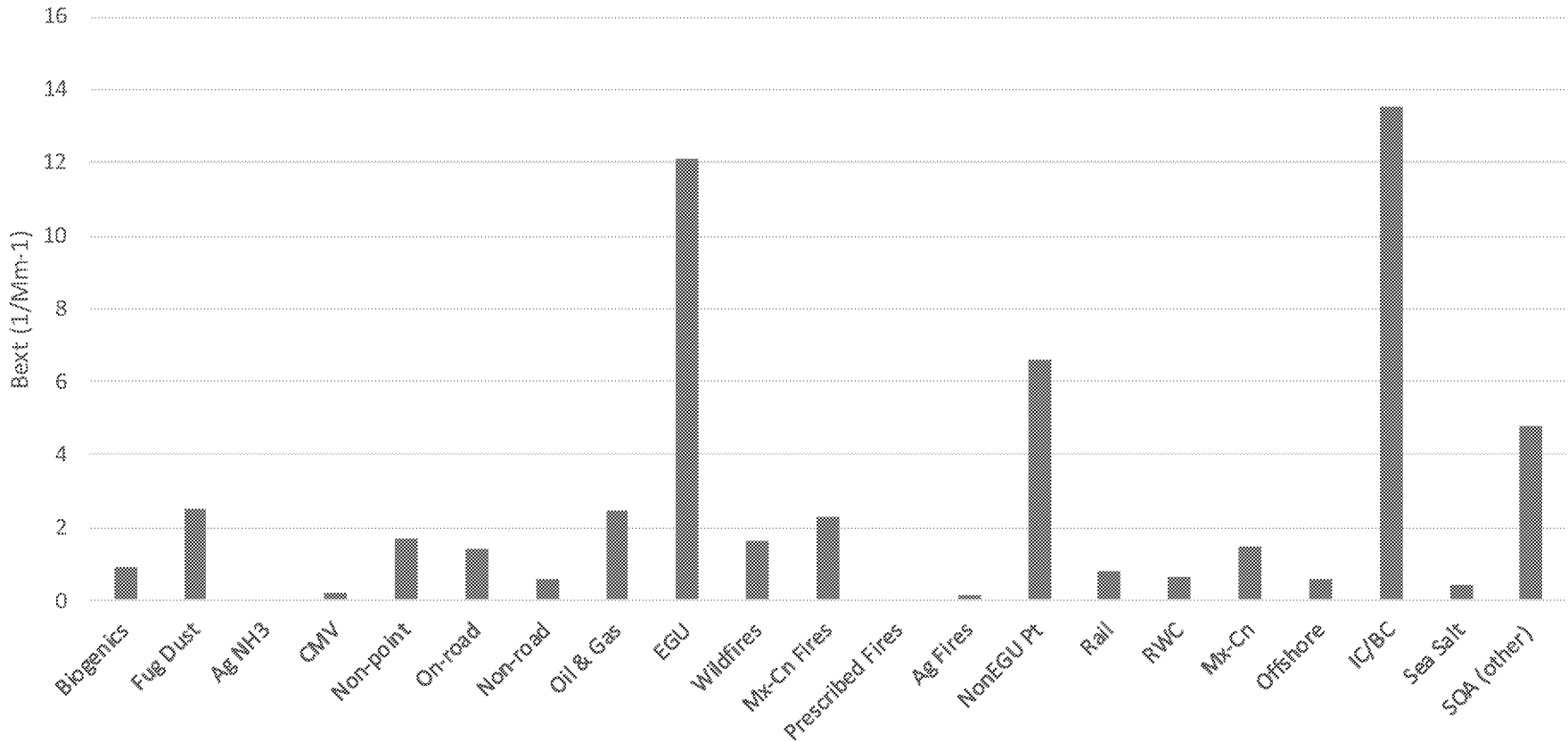
**Uniform Rate of Progress and 2028 Projected Progress
Caney Creek Wilderness Area**



Caney Creek Source Contribution



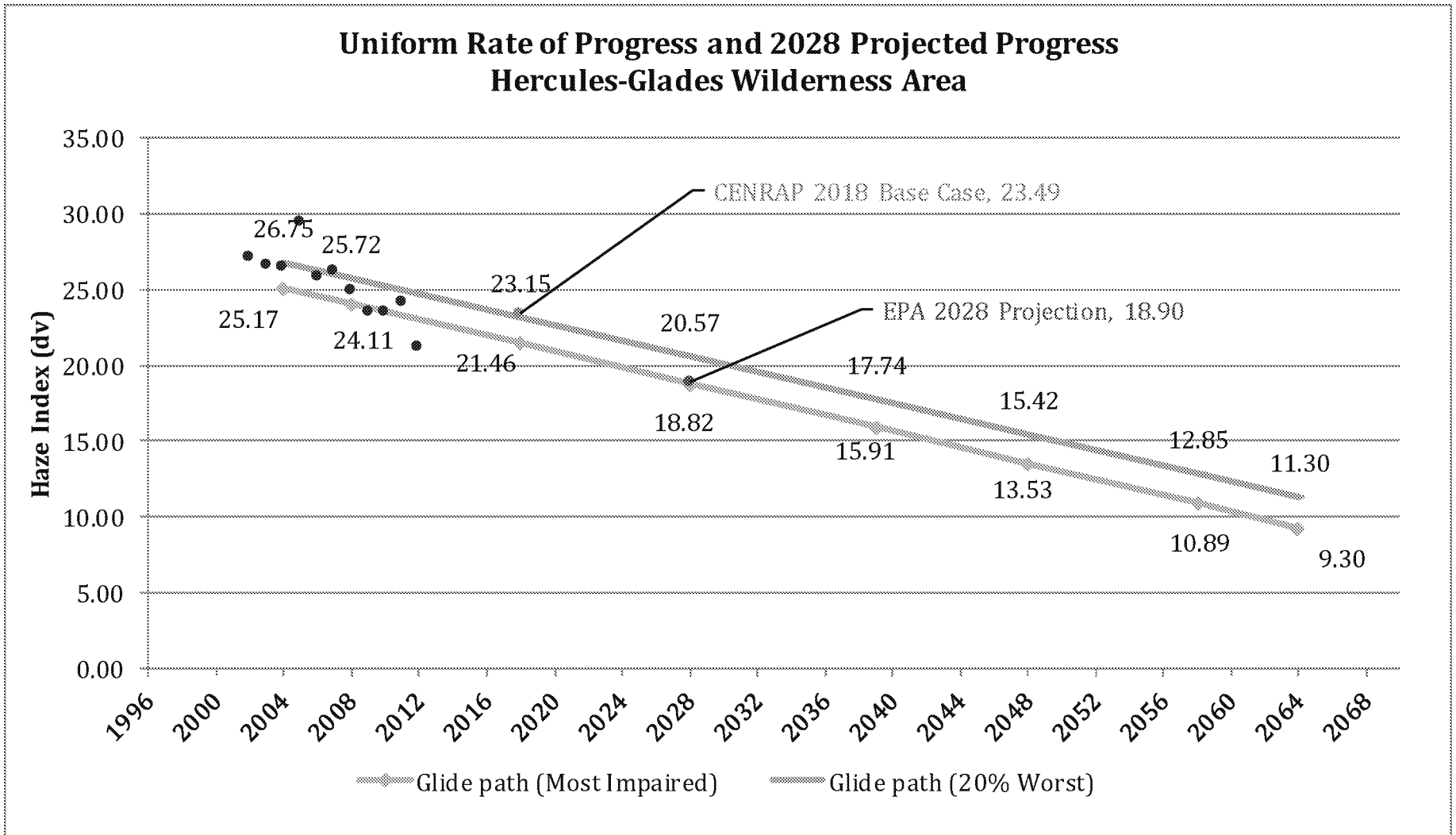
EPA 2028 Preliminary Modeling Source Contribution
Caney Creek Wilderness Area



Revised Glidepath for Hercules-Glades



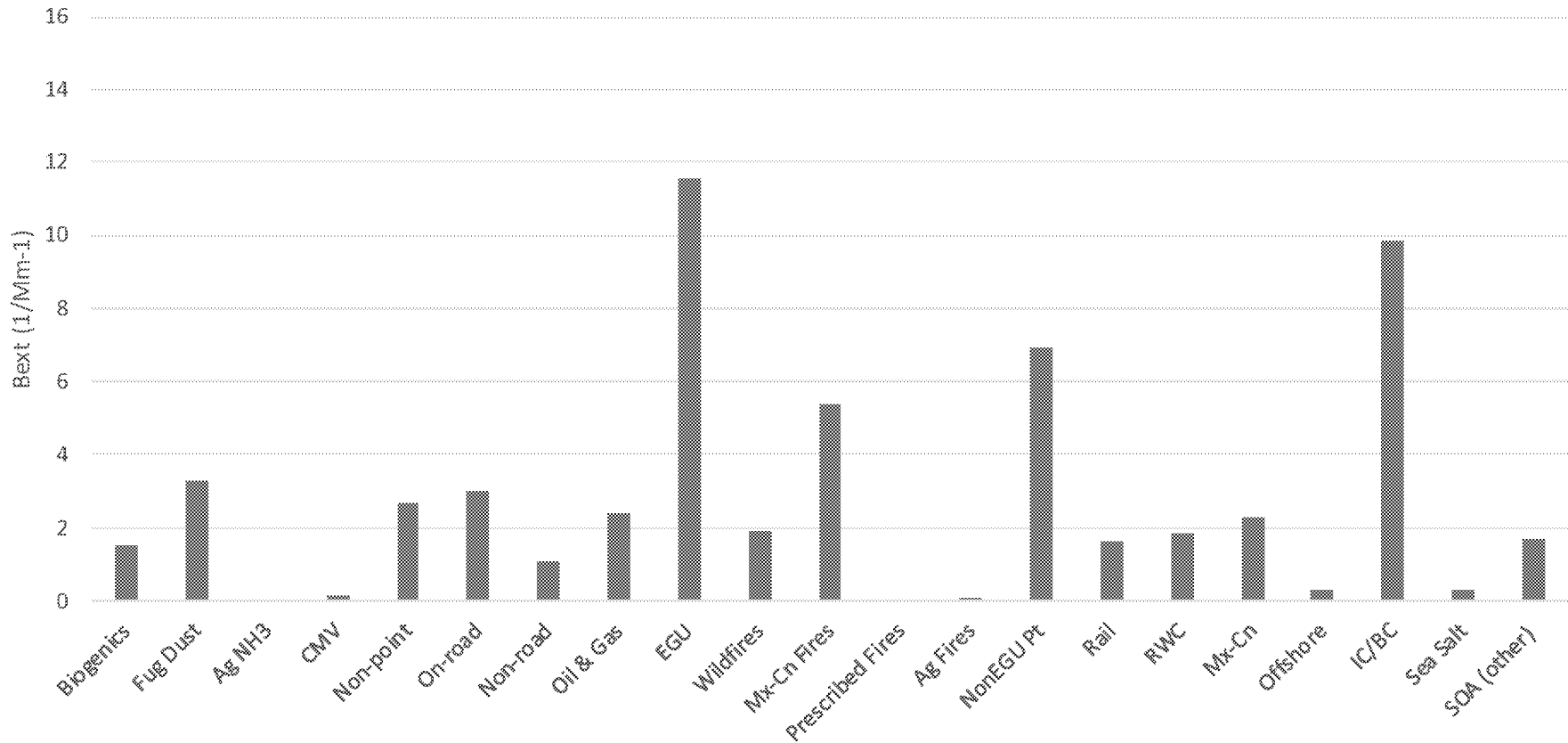
**Uniform Rate of Progress and 2028 Projected Progress
Hercules-Glades Wilderness Area**



Hercules-Glades Source Contribution



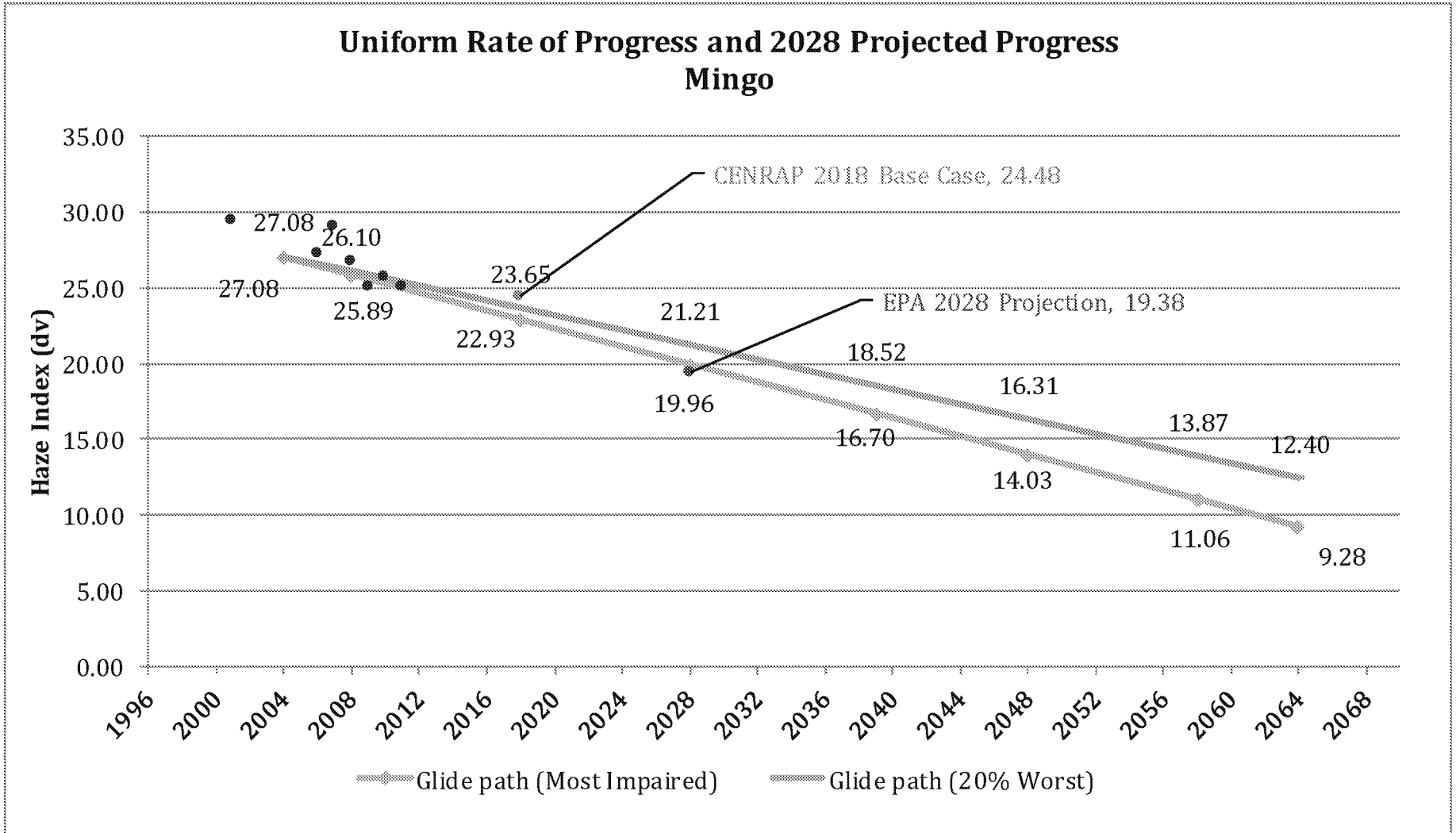
EPA 2028 Preliminary Modeling Source Contribution
Hercules-Glades Wilderness



Revised Glidepath for Mingo



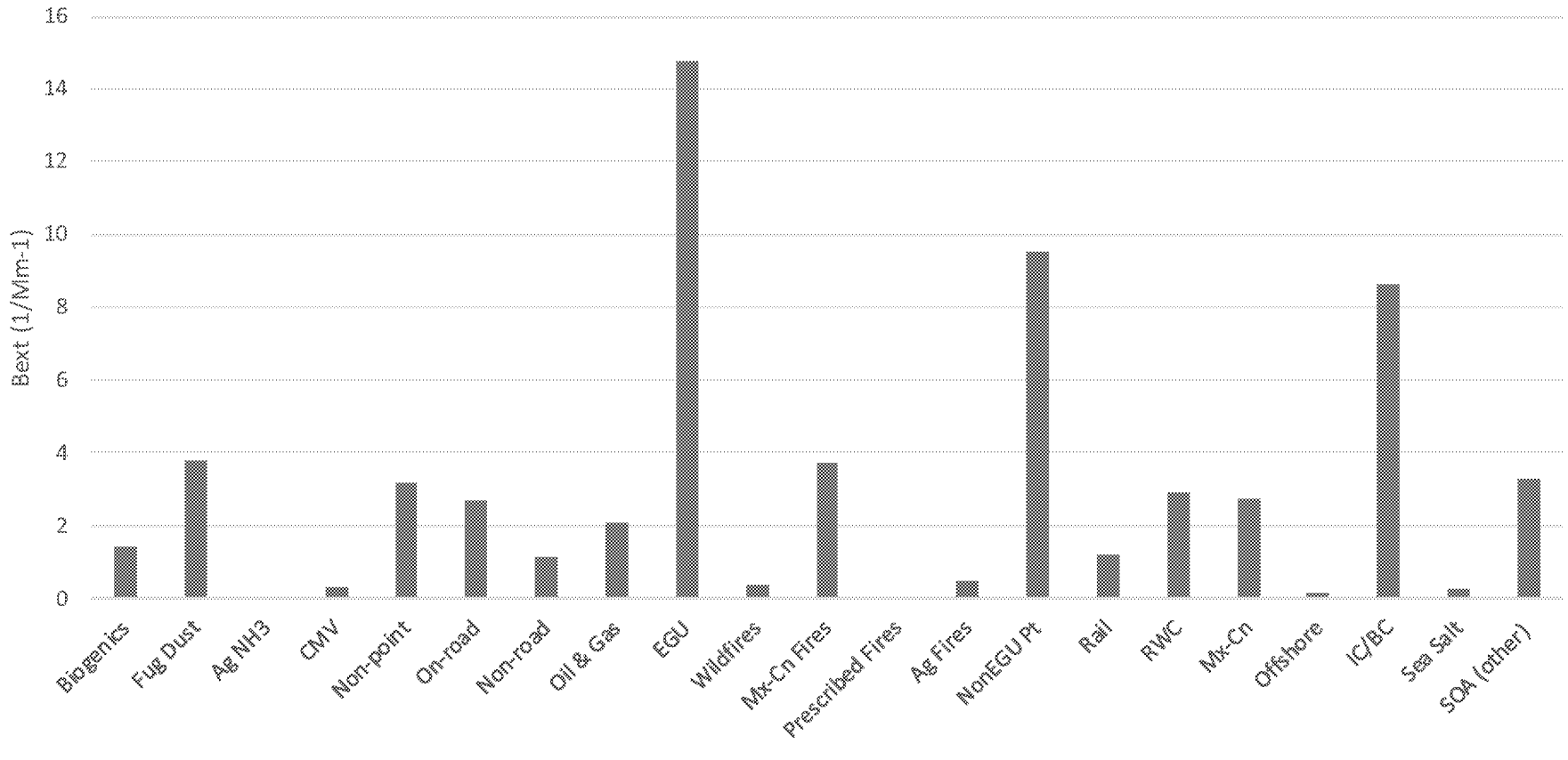
**Uniform Rate of Progress and 2028 Projected Progress
Mingo**



Mingo Source Contribution



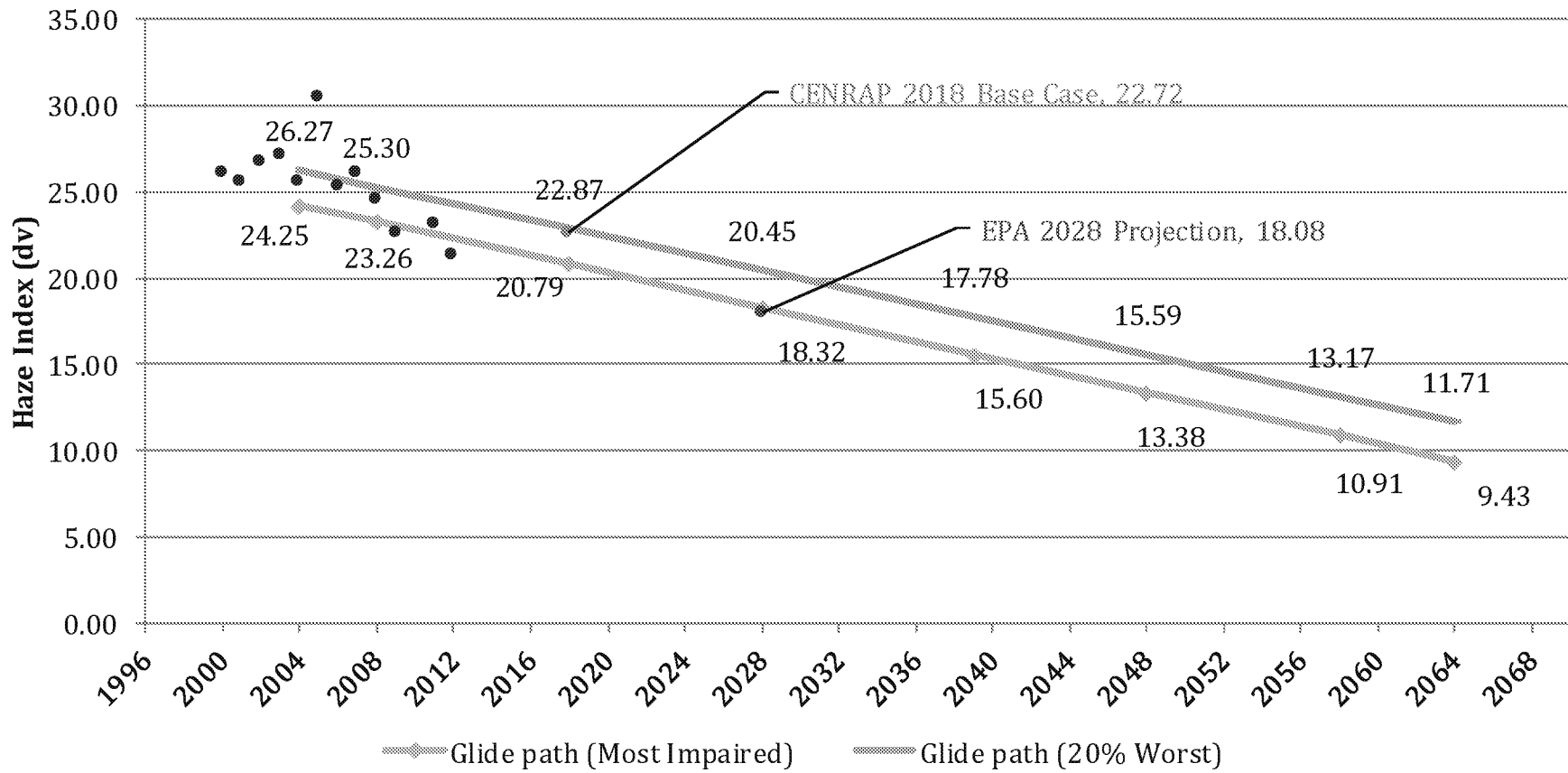
EPA 2028 Preliminary Modeling Source Contribution
Mingo



Revised Glidepath for Upper Buffalo



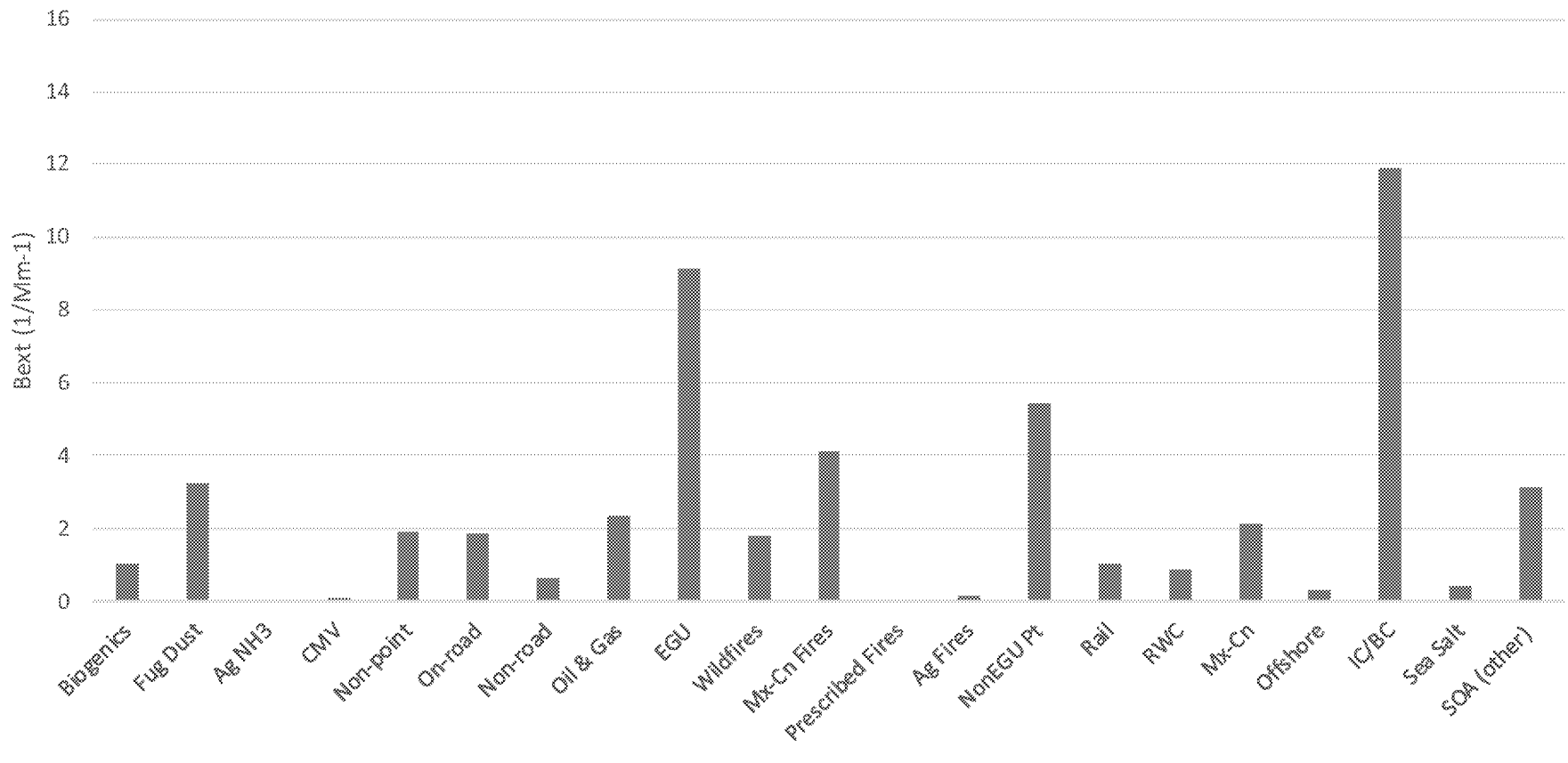
**Uniform Rate of Progress and 2028 Projected Progress
Upper Buffalo Wilderness Area**



Upper Buffalo Source Contribution



EPA 2028 Preliminary Modeling Source Contribution
Upper Buffalo Wilderness



- Low Sulfur Coal is not an “existing control” for BART or RP
- Replacement SIP reliance on 4 factor analysis is problematic
- Long Term Strategy should include CTUC dates
- EPA & NGOs continue to push forward Obama-era Regional Haze Program

Numerous technical and legal deficiencies could be cured through re-proposal of the Replacement SIP