

**FY11-15 Title V Expanded Workload Analysis Summary**

Title V Stakeholder Working Group

Tennessee Department of Environment and Conservation (TDEC)

May 5, 2016

**Leave Assumptions<sup>1</sup>**

Employee Years of Service	Sick Leave Accrued per Month	Annual Leave Accrued per Month	Sick Leave Accrued Annually	Annual Leave Accrued Annually	Paid Holidays Annual	Paid Holiday Hours Annually	Total Leave Hours Accrued Annually	Percent of Annual Work Hours (1950)
5 or Less	7.5	7.5	90	90	11	82.5	262.5	
5 to 10	7.5	11.3	90	135.6	11	82.5	308.1	
10 to 20	7.5	13.2	90	158.4	11	82.5	330.9	17%
20+	7.5	15	90	180	11	82.5	352.5	

Total Overall Months of APC Service	22,953
Average # Months of Service	182
Average # Years of Service	15.18

**Pro Rata Factors**

	No of Permit Share Factor					No of Facilities Share Factor					2014 Emissions Share Factor
	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015	
Eastman	0.1111	0.1120	0.1124	0.1142	0.1120	0.0046	0.0047	0.0046	0.0046	0.0046	0.1588
TVA Cumberland	0.0038	0.0039	0.0039	0.0039	0.0039	0.0046	0.0047	0.0046	0.0046	0.0046	0.0746
Jack Daniel Dist., Lem Motlow Prop., Tract II	0.0038	0.0039	0.0039	0.0039	0.0039	0.0046	0.0047	0.0046	0.0046	0.0046	0.0405
Resolute FP US Inc.	0.0038	0.0039	0.0039	0.0039	0.0039	0.0046	0.0047	0.0046	0.0046	0.0046	0.0559
Bridgestone/Firestone, Inc.	0.0038	0.0039	0.0039	0.0039	0.0039	0.0046	0.0047	0.0046	0.0046	0.0046	0.0038
Johns Manville	0.0038	0.0039	0.0039	0.0039	0.0039	0.0046	0.0047	0.0046	0.0046	0.0046	0.0024
MasterCraft Boat Company Inc.	0.0038	0.0039	0.0039	0.0039	0.0039	0.0046	0.0047	0.0046	0.0046	0.0046	0.0006
General Shale Brick, Inc. Plant # 11	0.0038	0.0039	0.0039	0.0039	0.0039	0.0046	0.0047	0.0046	0.0046	0.0046	0.0007
<b>TVA Total</b>	<b>0.0383</b>	<b>0.0386</b>	<b>0.0388</b>	<b>0.0394</b>	<b>0.0386</b>	<b>0.0411</b>	<b>0.0419</b>	<b>0.0415</b>	<b>0.0411</b>	<b>0.0411</b>	<b>0.3732</b>

<sup>1</sup> Leave assumptions are based on current APC workforce, not workforce active during FY 11-15. A number of employees with 20+ years of service which were employed during FY 11-15 have since retired. Therefore, leave assumptions are conservative, leading to an underestimate in leave time for which TDEC bears costs.

Bridgestone/Firestone Total	0.0115	0.0116	0.0116	0.0118	0.0116	0.0137	0.0140	0.0138	0.0137	0.0137	0.0060
Jack Daniels Total	0.0077	0.0077	0.0078	0.0079	0.0077	0.0091	0.0093	0.0092	0.0091	0.0091	0.0447
Johns Manville Total	0.0077	0.0077	0.0078	0.0079	0.0077	0.0091	0.0093	0.0092	0.0091	0.0091	0.0045

**1. Administrative Costs<sup>2</sup>**

Activities Included:

- Activities directly or indirectly supporting the Title V program performed within Central Office
  - Permit and report tracking
  - Training coordination
  - Processing travel claims
  - Budget preparation
  - Purchasing
  - Managing internal compliance databases and updating EPA Compliance and Enforcement database relevant to Title V program (MARM)
  - Managing APC databases and computer software relevant to Title V program (MARM)
  - Local program coordination pertaining to Title V program (MARM)
  - MARM administrative activities and training supporting Title V program
- Program direction and oversight and technical secretary activities relating to Title V program
- Division of Air Pollution Control (APC) APC Title V share of TDEC administrative functions
  - Human resources and personnel transactions
  - Budgeting, fiscal services, and financial planning
  - Information technology support
  - Office of General Counsel (regulation interpretation, legal counsel, pursuit of collection of unpaid fees, rulemaking, etc.)
  - Commissioner’s Office
- APC Title V share of BOE administrative functions
  - Administrative activities supporting the Title V program performed within field offices
  - Field Office facilities costs
  - BOE Deputy Commissioner and Senior Advisors
- Title V activity coded as administration, program management, personnel activities, and other program support by permitting, emissions inventory, regulatory development, special projects, technical services, compliance validation, and enforcement sections

Basis of Cost Determination:

- APC Central Office administrative support annual salary totals (50%)
- APC Director and Deputy Director annual salary totals (50%)
- APC Title V cost share of TDEC administrative budget
- APC Title V cost share of BOE administrative budget

<sup>2</sup> Administrative costs rely on a 50% split of staff time between Title V and non-Title V work. This underestimates the amount of time that APC leadership dedicates to Title V work. During the FY 11-15 time period the APC Director dedicated a significant amount of time to development of SIP packages. Additionally, administrative costs rely on APC Director and Deputy Director staff salaries, therefore do not capture any costs of travel or associated supplies that may be associated with Title V work.

- Technical staff hours logged as administrative activities in Smog Log from October 2012 to June 2015; used to estimate hours for July 2010 to September 2012
- Technical staff hours logged as Title V MARM activities in Smog Log from July 2014-June 2015; used to estimate hours for July 2010 to June 2014
- Average hourly pay rate for APC staff
- Pro rata allocation based on number of permits, number of facilities, and 2014 emissions for remaining costs for each year

	2011	2012	2013	2014	2015	5-Year Total
CO APC Support Staff Annual Salary	\$289,392.00	\$291,408.00	\$337,332.00	\$305,304.00	\$293,940.00	\$1,517,376.00
Director/Deputy Director Annual Salary	\$246,516.00	\$252,684.00	\$270,288.00	\$295,548.00	\$393,780.00	\$1,458,816.00
Sum: Title V Share of APC Leadership/Support (50%)	\$267,954.00	\$272,046.00	\$303,810.00	\$300,426.00	\$343,860.00	\$1,488,096.00
327.01 TDEC Admin APC Title V Cost Share	\$600,261.61	\$600,261.61	\$554,256.43	\$605,825.43	\$640,702.98	\$3,001,308.07
327.30 BOE Admin APC Title V Cost Share	\$243,234.35	\$243,234.35	\$232,438.90	\$245,222.97	\$252,041.17	\$1,216,171.73
Admin Costs from Special Projects in Smog Log	\$68,958.99	\$68,958.99	\$68,958.99	\$68,958.99	\$68,958.99	\$344,794.93
Tech Services Admin from Smog Log	\$56,380.97	\$56,380.97	\$56,380.97	\$56,380.97	\$56,380.97	\$281,904.83
Permitting, Emissions Inventory, Reg Devel Admin Coded from Smog Log	\$265,332.50	\$265,332.50	\$265,332.50	\$265,332.50	\$265,332.50	\$1,326,662.51
Compliance Validation Admin	\$34,701.33	\$34,701.33	\$34,701.33	\$34,701.33	\$34,701.33	\$173,506.67
Enforcement Admin	\$2,579.16	\$2,579.16	\$2,579.16	\$2,579.16	\$2,579.16	\$12,895.79
MARM-Admin	\$146,494.22	\$146,494.22	\$146,494.22	\$146,494.22	\$146,494.22	\$732,471.09
<b>Total Title V Program Admin Costs</b>	<b>\$1,685,897.12</b>	<b>\$1,689,989.12</b>	<b>\$1,664,952.49</b>	<b>\$1,725,921.56</b>	<b>\$1,811,051.31</b>	<b>\$8,577,811.62</b>

	Admin Costs \$Share 5-Year		
	By No of Permits	By No of Facilities	By Emissions
Eastman	\$963,530.15	\$39,662.69	\$1,361,995.25
TVA Cumberland	\$33,225.18	\$39,662.69	\$639,876.29
Jack Daniel Dist., Lem Motlow Prop., Tract II	\$33,225.18	\$39,662.69	\$347,106.53
Resolute FP US, Inc.	\$33,225.18	\$39,662.69	\$479,745.19
Bridgestone/Firestone, Inc.	\$33,225.18	\$39,662.69	\$32,349.53
Johns Manville	\$33,225.18	\$39,662.69	\$20,918.24
MasterCraft Boat Company Inc.	\$33,225.18	\$39,662.69	\$5,136.44
General Shale Brick, Inc. Plant #11	\$33,225.18	\$39,662.69	\$5,881.39
<b>TVA Total</b>	<b>\$332,251.78</b>	<b>\$356,964.22</b>	<b>\$3,200,938.39</b>
<b>Bridgestone/Firestone Total</b>	<b>\$ 99,675.53</b>	<b>\$118,988.07</b>	<b>\$51,859.44</b>
<b>Jack Daniels Total</b>	<b>\$ 66,450.36</b>	<b>\$ 79,325.38</b>	<b>\$383,305.60</b>
<b>Johns Manville Total</b>	<b>\$ 66,450.36</b>	<b>\$ 79,325.38</b>	<b>\$38,607.12</b>

**2. Small Business Environmental Assistance Program (SBEAP)**

Activities Included:

- Permitting assistance
- Onsite visits
- Training and workshops
- Outreach and education and materials development
- Regulatory notification
- Preventing and eliminating non-compliance

Basis of Cost Determination:

- SBEAP Annual Costs (staff salaries, program materials, staff travel, etc.)
- Pro rata allocation based on number of permits, number of facilities, and 2014 emissions for each year

	2011	2012	2013	2014	2015	5-Year Total
<b>SBEAP Total Costs</b>	<b>\$480,000</b>	<b>\$480,000</b>	<b>\$480,000</b>	<b>\$480,000</b>	<b>\$381,000</b>	<b>\$2,301,000</b>

	SBEAP \$Share 5-Year		
	By No of Permits	By No of Facilities	By Emissions
Eastman	\$258,495.38	\$10,567.83	\$365,355.55
TVA Cumberland	\$8,913.63	\$10,567.83	\$171,646.97
Jack Daniel Dist., Lem Motlow Prop., Tract II	\$8,913.63	\$10,567.83	\$93,111.41
Resolute FP US, Inc.	\$8,913.63	\$10,567.83	\$128,691.76
Bridgestone/Firestone, Inc.	\$8,913.63	\$10,567.83	\$8,677.77
Johns Manville	\$8,913.63	\$10,567.83	\$5,611.32
MasterCraft Boat Company Inc.	\$8,913.63	\$10,567.83	\$1,377.85
General Shale Brick, Inc. Plant #11	\$8,913.63	\$10,567.83	\$1,577.69
<b>TVA Total</b>	<b>\$89,136.34</b>	<b>\$95,110.45</b>	<b>\$858,652.48</b>
<b>Bridgestone/Firestone Total</b>	<b>\$26,740.90</b>	<b>\$31,703.48</b>	<b>\$13,911.31</b>
<b>Jack Daniels Total</b>	<b>\$17,827.27</b>	<b>\$21,135.65</b>	<b>\$102,821.82</b>
<b>Johns Manville Total</b>	<b>\$17,827.27</b>	<b>\$21,135.65</b>	<b>\$10,356.37</b>

### 3. Regulatory and Guidance Development

Activities Included:

- Regulation and standards development
- SIP submittal development
- SOP development
- Some special projects

Basis of Cost Determination:

- Title V staff hours logged in Smog Log from October 2012 to June 2015; used to estimate hours for July 2010 to September 2012
- Hourly pay rate for relevant staff
- Some permittee-specific allocation where feasible (Eastman and TVA)<sup>3</sup>
- Pro rata allocation based on number of permits, number of facilities, and 2014 emissions for remaining costs for each year

	<b>Reg Devel Hours, October 2012-June 2015 (33 months)</b>	<b>Average Monthly Reg Devel Hours</b>	<b>Estimated Reg Devel Hours July 2010-Sept 2012 (27 months)</b>	<b>Estimated Total Reg Devel Hours, July 2010-June 2015 (60 months)</b>	<b>Total Reg Devel Hours, Plus Leave</b>	<b>Average Hourly Pay Rate</b>	<b>5-Year Reg Devel Costs</b>	<b>1-Year Reg Devel Costs</b>
From Smog Log	4612.2	139.76	3773.62	8385.82	9811.41	\$ 51.12	<b>\$501,559.14</b>	<b>\$ 100,311.83</b>
Eastman-specific	65.8	1.99	53.84	119.64	139.97	\$ 51.12	\$ 7,155.50	\$ 1,431.10
TVA-specific	109.8	3.33	89.84	199.64	233.57	\$ 51.12	\$ 11,940.33	\$ 2,388.07
Difference for Pro Rata	4436.6	134.44	3629.95	8066.55	9437.86	\$ 51.12	\$482,463.31	\$ 96,492.66

<sup>3</sup> Permittee-specific allocation has been completed where it can be documented within Smog Log. However, based on knowledge of regulatory development work completed during this time, it is known that Eastman- and TVA-specific numbers presented are an underestimate of regulatory development time devoted to those permittees. The remaining hours may be captured within the totals used for pro rata allocation or within other categories of the analysis.

	Reg/Standards Development \$Share 5-Year		
	By No of Permits	By No of Facilities	By Emissions
Eastman	\$61,348.25	\$9,370.79	\$83,761.60
TVA Cumberland	\$1,868.72	\$2,215.29	\$35,990.16
Jack Daniel Dist., Lem Motlow Prop., Tract II	\$1,868.72	\$2,215.29	\$19,523.18
Resolute FP US, Inc.	\$1,868.72	\$2,215.29	\$26,983.51
Bridgestone/Firestone, Inc.	\$1,868.72	\$2,215.29	\$1,819.52
Johns Manville	\$1,868.72	\$2,215.29	\$1,176.56
MasterCraft Boat Company Inc.	\$1,868.72	\$2,215.29	\$288.90
General Shale Brick, Inc. Plant #11	\$1,868.72	\$2,215.29	\$330.80
<b>TVA Total</b>	<b>\$30,627.49</b>	<b>\$31,877.91</b>	<b>\$182,426.45</b>
<b>Bridgestone/Firestone Total</b>	<b>\$5,606.15</b>	<b>\$6,645.86</b>	<b>\$2,916.86</b>
<b>Jack Daniels Total</b>	<b>\$3,737.43</b>	<b>\$4,430.57</b>	<b>\$21,559.22</b>
<b>Johns Manville Total</b>	<b>\$3,737.43</b>	<b>\$4,430.57</b>	<b>\$2,171.48</b>

#### 4. Permitting Activities<sup>4</sup>

Activities Included:

- Issuance of the following types of permits for Title V facilities:
  - Construction Permit – Non-PSD
  - Construction Permit – PSD
  - Operating Permit – Acid Rain
  - Operating Permit – Administrative Amendment
  - Operating Permit – Initial
  - Operating Permit – Minor Modification
  - Operating Permit – Modification – Significant
  - Operating Permit – Operational Flexibility
  - Operating Permit – Renewal
  - Operating Permit – Reopen for Cause
- Corresponding/Working with Public
- Other time (e.g., follow-up research, responding to permit questions, presentations, etc.) (used infrequently)
- Otherwise unspecified permitting activities

Basis of Cost Determination:

- Title V staff hours logged in Smog Log from October 2012 to June 2015; used to estimate hours for July 2010 to September 2012
- Hourly pay rate for relevant staff

<sup>4</sup> Permitting activities do not include costs associated with travel performed to complete permitting activities. Therefore these costs are an underestimate of total permitting costs.

- Permittee-specific allocation

Permitting Hours, FY 14-15	Permitting Hours Estimate, FY 11-15	Permitting Hours Estimate, FY 11-15, Plus Leave	Average Hourly Pay Rate	Total Permitting Activity Costs, FY 11-15
12,119.30	60,596.5	70,897.905	\$51.12	\$3,624,300.90

	CO Permitting Hours, October 2012-June 2015 (33 months)	Average Monthly CO Permitting Hours	Estimated CO Permitting Hours July 2010-September 2012 (27 months)	Estimated Total CO Permitting Hours, July 2010-June 2015 (60 months)	Estimated Total CO Permitting Hours, July 2010-June 2015 (60 months), Plus Leave	Average Hourly Pay Rate	5-Year Permitting Costs
Eastman	1134.00	34.36	927.82	2061.82	2412.33	\$ 51.12	\$123,318.17
TVA Cumberland	350.80	10.63	287.02	637.82	746.25	\$ 51.12	\$ 38,148.16
Jack Daniel Dist., Lem Motlow Prop., Tract II	221.00	6.70	180.82	401.82	470.13	\$ 51.12	\$ 24,032.91
Resolute FP US Inc.	177.60	5.38	145.31	322.91	377.80	\$ 51.12	\$ 19,313.32
Bridgestone/Firestone, Inc.	192.30	5.83	157.34	349.64	409.07	\$ 51.12	\$ 20,911.89
Johns Manville	168.60	5.11	137.95	306.55	358.66	\$ 51.12	\$ 18,334.61
MasterCraft Boat Company Inc.	52.00	1.58	42.55	94.55	110.62	\$ 51.12	\$ 5,654.80
General Shale Brick, Inc. Plant # 11	84.00	2.55	68.73	152.73	178.69	\$ 51.12	\$ 9,134.68
<b>TVA Total</b>	<b>1887.40</b>	<b>57.19</b>	<b>1544.24</b>	<b>3431.64</b>	<b>4015.01</b>	<b>\$ 51.12</b>	<b>\$205,247.54</b>
<b>Bridgestone/Firestone Total</b>	<b>271.30</b>	<b>8.22</b>	<b>221.97</b>	<b>493.27</b>	<b>577.13</b>	<b>\$ 51.12</b>	<b>\$ 29,502.84</b>
<b>Jack Daniels Total</b>	<b>442.00</b>	<b>13.39</b>	<b>361.64</b>	<b>803.64</b>	<b>940.25</b>	<b>\$ 51.12</b>	<b>\$ 48,065.81</b>
<b>Johns Manville Total</b>	<b>386.70</b>	<b>11.72</b>	<b>316.39</b>	<b>703.09</b>	<b>822.62</b>	<b>\$ 51.12</b>	<b>\$ 42,052.15</b>

## 5. Implementing and Enforcing the Program<sup>5</sup>

### Activities Included:

- Inspections and Enforcement Activities, Field and Central Office
  - Inspections activities and associated travel
  - Case preparation
  - Case processing
  - Case resolution
  - Complaint investigations
  - Enforcement-related activities
  - MACT – Review of Plan
  - MACT – Title V Report – Not Part of SAR
  - NOV processing

<sup>5</sup> Implementation and enforcement activities performed by central office staff are not reflective of costs associated with travel performed. Therefore these costs represent an underestimate of total implementation and enforcement costs.

- Reports – Title V – ACC or SAR
- Support of Enforcement Activities – Title V

Basis of Cost Determination:

- Title V technical staff hours and mileage logged in Smog Log for permittees from July 2010 to June 2015
- Average hourly pay rate for APC inspections staff
- Average of federal mileage reimbursement rates for FY11-15
- Permittee-specific allocation

		Rate	Cost
FY 11-15 Title V Program Total Inspection Hours from Smog Log	33703.8		\$ 1,308,044.48
FY 11-15 Title V Program Total Inspection Hours, Plus Leave	39433.446	\$38.81	\$ 1,530,412.04
FY 11-15 Title V Program Total Inspection Mileage from Smog Log	76770	\$0.54	\$ 41,455.80
FY 11-15 Title V Program Total Complaint Hours from Smog Log	501.7		\$ 19,470.98
FY 11-15 Title V Program Total Complaint Hours, Plus Leave	586.989	\$38.81	\$ 22,781.04
FY 11-15 Title V Program Total Complaint Mileage from Smog Log	5104	\$0.54	\$ 2,756.16
Total FY 14-15 Title V CO I&E Hours	2462.1		\$ 95,554.10
Estimated FY 11-15 Title V CO I&E Hours	12310.5		\$ 477,770.51
Estimated FY 11-15 Title V CO I&E Hours, Plus Leave	14403.285	\$38.81	\$ 558,991.49
<b>Total Estimated I&amp;E Program Costs, FY 11-15</b>			<b>\$ 2,156,396.53</b>

	Total Implementation and Enforcement Hours	Total Implementation and Enforcement Hours, with Leave	Average Implementation and Enforcement Pay Rate	Total 5-Year Implementation and Enforcement Staff Costs	Rate Per Mile	Mileage Costs	Grand Total 5-Year Implementation and Enforcement Staff and Mileage Costs
Eastman	2891.9	3383.523	\$ 38.81	\$ 131,314.53	\$ 0.54	\$ 1,420.74	\$ 132,735.27
TVA Cumberland	168.3	196.911	\$ 38.81	\$ 7,642.12	\$ 0.54	\$ 329.40	\$ 7,971.52
Jack Daniel Dist., Lem Motlow Prop., Tract II	135.7	158.769	\$ 38.81	\$ 6,161.82	\$ 0.54	\$ 44.28	\$ 6,206.10
Resolute FP US Inc.	350.6	410.202	\$ 38.81	\$ 15,919.94	\$ 0.54	\$ 759.78	\$ 16,679.72
Bridgestone/Firestone, Inc.	187.8	219.726	\$ 38.81	\$ 8,527.57	\$ 0.54	\$ 151.74	\$ 8,679.31
Johns Manville	312.6	365.742	\$ 38.81	\$ 14,194.45	\$ 0.54	\$ 414.18	\$ 14,608.63
MasterCraft Boat Company Inc.	211.9	247.923	\$ 38.81	\$ 9,621.89	\$ 0.54	\$ 262.98	\$ 9,884.87
General Shale Brick, Inc. Plant # 11	140	163.8	\$ 38.81	\$ 6,357.08	\$ 0.54	\$ 480.60	\$ 6,837.68
<b>TVA Total</b>	<b>1690</b>	<b>1977.3</b>	<b>\$ 38.81</b>	<b>\$ 76,739.01</b>	<b>\$ 0.54</b>	<b>\$ 2,479.68</b>	<b>\$ 79,218.69</b>
<b>Bridgestone/Firestone Total</b>	<b>520.5</b>	<b>608.985</b>	<b>\$ 38.81</b>	<b>\$ 23,634.71</b>	<b>\$ 0.54</b>	<b>\$ 724.68</b>	<b>\$ 24,359.39</b>
<b>Jack Daniels Total</b>	<b>447.7</b>	<b>523.809</b>	<b>\$ 38.81</b>	<b>\$ 20,329.03</b>	<b>\$ 0.54</b>	<b>\$ 309.42</b>	<b>\$ 20,638.45</b>
<b>Johns Manville Total</b>	<b>511</b>	<b>597.87</b>	<b>\$ 38.81</b>	<b>\$ 23,203.33</b>	<b>\$ 0.54</b>	<b>\$ 1,230.66</b>	<b>\$ 24,433.99</b>



**6. Emissions and Ambient Monitoring**

Activities Included:

- Compliance Validation<sup>6</sup>
  - Title V Continuous Emission Monitoring Systems (CEMS) data audits
  - Title V source testing activities
- Field Services Ambient Monitoring
- Technical Services Ambient Monitoring<sup>7</sup>

Basis of Cost Determination:

- Compliance Validation
  - Technical staff Title V hours logged in Smog Log for permittees from July 2010 to June 2015
  - Average hourly pay rate for APC compliance validation staff
  - Permittee-specific allocation<sup>8</sup>
- Field Services Ambient Monitoring
  - Field staff Title V hours logged in Smog Log from July 2010 to June 2015
  - Average hourly pay rate for APC field services staff
  - Pro rata allocation based on number of permits, number of facilities, and 2014 emissions for costs for each year
- Technical Services Ambient Monitoring<sup>9</sup>
  - Technical Services Title V monitoring hours logged in Smog Log from June 2010 to June 2015
  - Average hourly pay rate for APC Technical Services staff
  - Technical Services monitoring equipment and site costs
  - Permittee-specific allocation for equipment and sites when possible (Eastman, Resolute, Bridgestone/Firestone, Johns Manville, Bridgestone/Firestone Total)
  - Pro rata allocation of staff time and remaining equipment based on number of permits, number of facilities, and 2014 emissions for costs for each year

Compliance Validation:

FY 14-15 Compliance Validation Hours	7327
Estimated Title V CV Activities Hours, 5-Years	36635
Estimated Title V CV Activities Hours, 5-Years, Plus Leave	42862.95
Rate	\$45.42
<b>Total CV 5-Year Costs</b>	<b>\$ 1,946,835.19</b>

<sup>6</sup> Travel costs excluded, therefore costs are underestimate.

<sup>7</sup> Travel costs excluded, therefore costs are underestimate. Technical Services ambient monitoring will represent an underestimate of costs in the future, as during the time period of the expanded workload analysis, Eastman performed monitoring for SO<sub>2</sub>. In the future, the state will take on these monitoring activities and associated costs.

<sup>8</sup> Only permittee-specific work is reflected in compliance validation estimates. There are additional compliance validation program costs that can be attributed to the Title V program that are not reflected in this component of the workload analysis, such as Visible Emission Evaluator (VEE) School.

<sup>9</sup> Travel associated with technical services ambient monitoring activities is not capture in this analysis. Therefore technical services ambient monitoring costs are an underestimate of total program costs.

	2011	2012	2013	2014	2015	Total Hours	Total Hours, Plus Leave	Average Hourly Pay Rate	5-Year Compliance Validation Costs
Eastman	254	346	518.5	337.5	427.5	1883.5	2203.695	\$ 45.42	\$ 100,091.83
TVA Cumberland	75	60	206	126	74	541	632.97	\$ 45.42	\$ 28,749.50
Jack Daniels	45	45	45	45	45	225	263.25	\$ 45.42	\$ 11,956.82
Resolute	111	45	100	55	110	421	492.57	\$ 45.42	\$ 22,372.53
Bridgestone/Firestone	0	0	0	0	0	0	0	\$ 45.42	\$ -
Johns Manville	0	0	50	10	36	96	112.32	\$ 45.42	\$ 5,101.57
General Shale	17	7.5	0	0	0	24.5	28.665	\$ 45.42	\$ 1,301.96
MasterCraft	0	0	0	0	0	0	0	\$ 45.42	\$ -
<b>TVA Total</b>	<b>662.5</b>	<b>613.7</b>	<b>877.9</b>	<b>603.2</b>	<b>560.2</b>	<b>3317.5</b>	<b>3881.475</b>	<b>\$ 45.42</b>	<b>\$ 176,296.59</b>
<b>Bridgestone/Firestone Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$ 45.42</b>	<b>\$ -</b>
<b>Jack Daniels Total</b>	<b>45</b>	<b>45</b>	<b>45</b>	<b>45</b>	<b>45</b>	<b>225</b>	<b>263.25</b>	<b>\$ 45.42</b>	<b>\$ 11,956.82</b>
<b>Johns Manville Total</b>	<b>5</b>	<b>0</b>	<b>50</b>	<b>10</b>	<b>36</b>	<b>101</b>	<b>118.17</b>	<b>\$ 45.42</b>	<b>\$ 5,367.28</b>

Field Services Ambient Monitoring:

Year	Hours	Hours, Plus Leave	Average Hourly Pay Rate	Annual Field Services Ambient Monitoring Costs
2011	7619.5	8914.815	\$ 34.65	\$ 308,898.34
2012	7210.7	8436.519	\$ 34.65	\$ 292,325.38
2013	5732.4	6706.908	\$ 34.65	\$ 232,394.36
2014	5114.3	5983.731	\$ 34.65	\$ 207,336.28
2015	2353.4	2753.478	\$ 34.65	\$ 95,408.01
<b>5-Year Program Total</b>	<b>28030.3</b>	<b>32795.45</b>		<b>\$ 1,136,362.38</b>

	Field Services Ambient Monitoring \$Share 5-Year		
	By No of Permits	By No of Facilities	By Emissions
Eastman	\$127,530.30	\$5,223.48	\$180,432.99
TVA Cumberland	\$4,397.60	\$5,223.48	\$84,768.86
Jack Daniels	\$4,397.60	\$5,223.48	\$45,983.62
Resolute	\$4,397.60	\$5,223.48	\$63,555.18
Bridgestone/Firestone	\$4,397.60	\$5,223.48	\$4,285.57
Johns Manville	\$4,397.60	\$5,223.48	\$2,771.19
General Shale	\$4,397.60	\$5,223.48	\$680.46
MasterCraft	\$4,397.60	\$5,223.48	\$779.15
<b>TVA Total</b>			
	\$43,975.97	\$47,011.35	\$424,050.58
<b>Bridgestone/Firestone Total</b>			
	\$13,192.79	\$15,670.45	\$6,870.18
<b>Jack Daniels Total</b>			
	\$8,795.19	\$10,446.97	\$50,779.16
<b>Johns Manville Total</b>			
	\$8,795.19	\$10,446.97	\$5,114.55

Technical Services Ambient Monitoring:

	Annual Air Monitoring Site Costs	5-Year Air Monitoring Site Costs
Electricity	\$ 780.00	\$ 3,900.00
Phone	\$ 420.00	\$ 2,100.00
Internet	\$ 420.00	\$ 2,100.00
Mowing/trimming	\$ 420.00	\$ 2,100.00
Ext. shelter painting	\$ 100.00	\$ 500.00
Repairs	\$ 100.00	\$ 500.00

	Average Equipment Cost, 5-Year Life
Data logger	\$ 5,001.33
Monitor	\$ 6,872.00
Ozone calibrator	\$ 10,750.00
<i>SO<sub>2</sub> calibrator</i>	\$ 11,480.00
<i>SO<sub>2</sub> monitor</i>	\$ 12,371.00

	State Monitors	5-Year Monitoring Equipment Costs	Equipment Factors
Eastman (Sullivan, Lead co-located)	1	\$ 6,872.00	1 lead monitor
	State Monitors	5-Year Monitoring Site Costs	Site Factors
Sullivan County Ozone	2	\$22,400.00	2 electricity, 2 phone, 2 internet, 2 mowing/painting, repairs
Sullivan County PM2.5	1	\$11,200.00	1 electricity, 1 phone, 1 internet, 1 mowing/painting/repairs
McMinn County PM2.5	2	\$22,400.00	2 electricity, 2 phone, 2 internet, 2 mowing/painting/repair
Rutherford County Ozone	1	\$11,200.00	1 electricity, 1 phone, 1 internet, 1 mowing/painting/repair
Montgomery County PM2.5	1	\$11,200.00	1 electricity, 1 phone, 1 internet, 1 mowing/painting/repairs

Total 5-Year Monitoring and Equipment Site Costs	
All Equipment Costs	\$ 428,064.00
All Equipment Less Attributable to Eastman	\$ 421,192.00
All Site Costs	\$ 78,400.00
Eastman-specific	\$ 6,872.00
<b>Total Equipment and Site Costs for Pro Rata</b>	<b>\$ 499,592.00</b>
<b>Grand Total</b>	<b>\$ 506,464.00</b>

	Total Tech Services Hours, July 2010-June 2015 (60 months)	Total Tech Services Hours, Plus Leave	Average Hourly Pay Rate	5-Year Tech Services Costs	Annual Average Tech Services Costs	5-Year Equipment and Sites Costs	Annual Equipment and Sites Costs
From Smog Log	34106.3	39904.371	\$ 43.39	\$ 1,731,450.66	\$ 346,290.13		
Equipment and Sites for Pro Rata						\$ 499,592.00	\$ 99,918.40
Equipment and Sites--Eastman Specific						\$ 6,872.00	\$ 1,374.40

	CO Monitoring/TechSrvs \$Share 5-Year		
	By No of Permits	By No of Facilities	By Emissions
Eastman	\$257,474.16	\$17,116.09	\$361,119.64
TVA Cumberland	\$8,641.45	\$10,244.09	\$166,428.38
Jack Daniel Dist., Lem Motlow Prop., Tract II	\$8,641.45	\$10,244.09	\$90,280.54
Resolute FP US Inc.	\$8,641.45	\$10,244.09	\$124,779.14
Bridgestone/Firestone, Inc.	\$8,641.45	\$10,244.09	\$8,413.94
Johns Manville	\$8,641.45	\$10,244.09	\$5,440.72
MasterCraft Boat Company Inc.	\$8,641.45	\$10,244.09	\$1,335.96
General Shale Brick, Inc. Plant # 11	\$8,641.45	\$10,244.09	\$1,529.72
<b>TVA Total</b>			
TVA Total	\$86,414.54	\$92,196.85	\$832,546.86
<b>Bridgestone/Firestone Total</b>			
Bridgestone/Firestone Total	\$25,924.36	\$30,732.28	\$13,488.36
<b>Jack Daniels Total</b>			
Jack Daniels Total	\$17,282.91	\$20,488.19	\$99,695.72
<b>Johns Manville Total</b>			
Johns Manville Total	\$17,282.91	\$20,488.19	\$10,041.51

## 7. Modeling, Analyses, or Demonstrations

### Activities Included:

- Modeling – Ambient Non-Compliance
- Modeling – Miscellaneous
- Modeling – NA-NSR Impact Analysis
- Modeling – PSD Impact Analysis
- Modeling – Routine Permit
- SIP Impact Analysis Review
- Some special projects

### Basis of Cost Determination:

- Title V staff hours logged in Smog Log from October 2012 to June 2015; used to estimate hours for July 2010 to September 2012
- Hourly pay rate for relevant staff
- Some permittee-specific allocation where feasible (Eastman)
- Pro rata allocation of remainder based on number of permits, number of facilities, and 2014 emissions for remaining costs for each year

	Modeling, Analyses, or Demos Hours, October 2012-June 2015 (33 months)	Average Monthly Modeling, Analyses, or Demos Hours	Estimated Modeling, Analyses, or Demos Hours July 2010-Sept 2012 (27 months)	Estimated Total Modeling, Analyses, or Demos Hours, July 2010-June 2015 (60 months)	Modeling, Analyses, or Demos Hours, Plus Leave	Average Hourly Pay Rate	5-Year Modeling, Analyses, or Demos Costs	1-Year Modeling, Analyses, or Demos Costs
From Smog Log	2296.2	69.58181818	1878.709091	4174.909091	4884.64364	\$ 51.12	\$249,702.98	\$ 49,940.60
From Tech Services				426.4	498.888	\$ 40.47	\$ 20,190.00	\$ 4,038.00
Eastman-specific	308	9.333333333	252	560	655.2	\$ 51.12	\$ 33,493.82	\$ 6,698.76
Difference for Pro Rata	1988.2	60.24848485	1626.709091	4041.309091	4728.33164	\$ 51.12	\$241,712.31	\$ 48,342.46

	Modeling, Analyses, and Demonstrations \$Share 5-Year		
	By No of Permits	By No of Facilities	By Emissions
Eastman	\$60,644.19	\$34,603.67	\$71,873.20
TVA Cumberland	\$936.22	\$1,109.85	\$18,030.94
Jack Daniel Dist., Lem Motlow Prop., Tract II	\$936.22	\$1,109.85	\$9,781.04
Resolute FP US Inc.	\$936.22	\$1,109.85	\$13,518.64
Bridgestone/Firestone, Inc.	\$936.22	\$1,109.85	\$911.57
Johns Manville	\$936.22	\$1,109.85	\$589.45
MasterCraft Boat Company Inc.	\$936.22	\$1,109.85	\$144.74
General Shale Brick, Inc. Plant # 11	\$936.22	\$1,109.85	\$165.73
<b>TVA Total</b>	<b>\$9,362.20</b>	<b>\$9,988.65</b>	<b>\$90,198.56</b>
<b>Bridgestone/Firestone Total</b>	<b>\$2,808.66</b>	<b>\$3,329.55</b>	<b>\$1,461.34</b>
<b>Jack Daniels Total</b>	<b>\$1,872.44</b>	<b>\$2,219.70</b>	<b>\$10,801.09</b>
<b>Johns Manville Total</b>	<b>\$1,872.44</b>	<b>\$2,219.70</b>	<b>\$1,087.90</b>

## 8. Preparing Inventories and Tracking Emissions<sup>10</sup>

### Activities Included:

- Maintenance of emissions database
- Accuracy review and input of annual Title V facility emissions inventory submittal
- Accuracy review and input of triennial Title V facility emissions inventory submittal

### Basis of Cost Determination:

- Title V staff hour estimates for completion of annual inventory work for each permittee
- Hourly pay rate for relevant staff

<sup>10</sup> Several individuals responsible for these activities during the FY 11-15 are no longer with the department. These estimates are based on current staff approximations for time. It is known that staff performing these activities regularly did not claim any comp or overtime for hours spent beyond standard work time.

- Permittee-specific allocation

	<b>Annual Inventory Hours Estimate</b>	<b>Inventory Hours 5-Year Estimate</b>	<b>Inventory Hours 5-Year Estimate, Plus Leave</b>	<b>Average Hourly Pay Rate</b>	<b>5-Year Inventory Costs</b>
Eastman	15	75	87.75	\$ 36.83	\$ 3,231.83
TVA Cumberland	5.5	27.5	32.175	\$ 36.83	\$ 1,185.01
Jack Daniels	7.5	37.5	43.875	\$ 36.83	\$ 1,615.92
Resolute	11.25	56.25	65.8125	\$ 36.83	\$ 2,423.87
Bridgestone/Firestone	7.5	37.5	43.875	\$ 36.83	\$ 1,615.92
Johns Manville	3	15	17.55	\$ 36.83	\$ 646.37
General Shale	4	20	23.4	\$ 36.83	\$ 861.82
MasterCraft	4	20	23.4	\$ 36.83	\$ 861.82
<b>TVA Total</b>	<b>60</b>	<b>300</b>	<b>351</b>	<b>\$ 36.83</b>	<b>\$12,927.33</b>
<b>Bridgestone/Firestone Total</b>	<b>22.5</b>	<b>112.5</b>	<b>131.625</b>	<b>\$ 36.83</b>	<b>\$ 4,847.75</b>
<b>Jack Daniels Total</b>	<b>15</b>	<b>75</b>	<b>87.75</b>	<b>\$ 36.83</b>	<b>\$ 3,231.83</b>
<b>Johns Manville Total</b>	<b>15</b>	<b>75</b>	<b>87.75</b>	<b>\$ 36.83</b>	<b>\$ 3,231.83</b>

## 9. Training

### Activities Included:

- Title V Field Services Training Given and Received
- Title V Central Office Training Given and Received (permitting, emissions inventory, regulatory development and complex sources, etc.)

### Basis of Cost Determination:

- Title V technical staff training hours logged by central office staff from July 2014-June 2015; used to estimate hours for July 2010 to June 2014
- Title V field services staff training hours logged from July 2010-June 2015
- Hourly pay rate for relevant staff
- Pro rata allocation based on number of permits, number of facilities, and 2014 emissions for costs for each year

Field Services Training:

Field Services Training				
Year	Hours	Hours Logged, Plus Leave	Average Hourly Pay Rate	Field Services Training Costs
2011	1921	2247.57	\$ 34.65	\$ 77,878.30
2012	3189.5	3731.715	\$ 34.65	\$ 129,303.92
2013	2379.5	2784.015	\$ 34.65	\$ 96,466.12
2014	2792.5	3267.225	\$ 34.65	\$ 113,209.35
2015	2246.2	2628.054	\$ 34.65	\$ 91,062.07
<b>5-Year Total</b>				<b>\$ 507,919.76</b>

	Field Services Training \$Share 5-Year		
	By No of Permits	By No of Facilities	By Emissions
Eastman	\$57,095.90	\$2,334.31	\$80,648.11
TVA Cumberland	\$1,968.82	\$2,334.31	\$37,889.13
Jack Daniels	\$1,968.82	\$2,334.31	\$20,553.29
Resolute	\$1,968.82	\$2,334.31	\$28,407.25
Bridgestone/Firestone	\$1,968.82	\$2,334.31	\$1,915.52
Johns Manville	\$1,968.82	\$2,334.31	\$1,238.64
General Shale	\$1,968.82	\$2,334.31	\$304.15
MasterCraft	\$1,968.82	\$2,334.31	\$348.26
<b>TVA Total</b>	<b>\$19,688.24</b>	<b>\$21,008.82</b>	<b>\$189,537.84</b>
<b>Bridgestone/Firestone Total</b>	<b>\$5,906.47</b>	<b>\$7,002.94</b>	<b>\$3,070.76</b>
<b>Jack Daniels Total</b>	<b>\$3,937.65</b>	<b>\$4,668.63</b>	<b>\$22,696.76</b>
<b>Johns Manville Total</b>	<b>\$3,937.65</b>	<b>\$4,668.63</b>	<b>\$2,286.05</b>



Central Office Training:

	<b>Training Hours, October 2012-June 2015 (33 months)</b>	<b>Average Monthly Training Hours</b>	<b>Estimated Training Hours July 2010- Sept 2012 (27 months)</b>	<b>Estimated Training Hours, July 2010- June 2015 (60 months)</b>	<b>Total Training Hours, Plus Leave</b>	<b>Average Hourly Pay Rate</b>	<b>5-Year Training Costs</b>	<b>1-Year Training Costs</b>
Permitting, Emissions Inventory, Reg Devel, and Special Projects Training Given from Smog Log	453.9	13.75454545	371.3727273	825.2727273	965.569091	\$ 51.12	\$ 49,359.89	\$ 9,871.98
Permitting, Emissions Inventory, Reg Devel, and Special Projects Training Received from Smog Log	3234	98	2646	5880	6879.6	\$ 51.12	\$351,685.15	\$ 70,337.03
	<b>Training Hours, July 2014-June 2015 (12 months)</b>	<b>Average Monthly Training Hours</b>	<b>Estimated Training Hours July 2010- June 2014 (48 months)</b>	<b>Estimated Training Hours, July 2010- June 2015 (60 months)</b>	<b>Total Training Hours, Plus Leave</b>	<b>Average Hourly Pay Rate</b>	<b>5-Year Training Costs</b>	<b>1-Year Training Costs</b>
Compliance Validation Training Given	21	1.75	84	105	122.85	\$ 45.42	\$ 5,579.85	\$ 1,115.97
Compliance Validation Training Received	119.8	9.983333333	479.2	599	700.83	\$ 45.42	\$ 31,831.70	\$ 6,366.34
Enforcement Training Given	1	0.083333333	4	5	5.85	\$ 38.81	\$ 227.04	\$ 45.41
Enforcement Training Received	104.1	8.675	416.4	520.5	608.985	\$ 38.81	\$ 23,634.71	\$ 4,726.94
<b>Total</b>								<b>\$ 92,463.67</b>

	<b>Other Staff Training \$Share 5-Year</b>		
	<b>By No of Permits</b>	<b>By No of Facilities</b>	<b>By Emissions</b>
Eastman	\$51,929.97	\$2,122.79	\$73,407.46
TVA Cumberland	\$1,790.69	\$2,122.79	\$34,487.41
Jack Daniels	\$1,790.69	\$2,122.79	\$18,708.00
Resolute	\$1,790.69	\$2,122.79	\$25,856.83
Bridgestone/Firestone	\$1,790.69	\$2,122.79	\$1,743.54
Johns Manville	\$1,790.69	\$2,122.79	\$1,127.43
General Shale	\$1,790.69	\$2,122.79	\$276.84
MasterCraft	\$1,790.69	\$2,122.79	\$316.99
<b>TVA Total</b>	<b>\$17,906.89</b>	<b>\$19,105.10</b>	<b>\$172,520.99</b>
<b>Bridgestone/Firestone Total</b>	<b>\$5,372.07</b>	<b>\$6,368.37</b>	<b>\$2,795.07</b>
<b>Jack Daniels Total</b>	<b>\$3,581.38</b>	<b>\$4,245.58</b>	<b>\$20,659.02</b>
<b>Johns Manville Total</b>	<b>\$3,581.38</b>	<b>\$4,245.58</b>	<b>\$2,080.81</b>

**GRAND TOTAL**

	Number of Permits	Number of Facilities	Emissions	Grand Total 5-Year Costs			Grand Total Average Annual Costs			Grand Total Annual Costs Based on Board WLA			2014 Permit Fees Due
				By No of Permits	By No of Facilities	By Emissions	By No of Permits	By No of Facilities	By Emissions	By No of Permits	By No of Facilities	By Emissions	
Eastman	29	1	26,566	\$2,197,425.40	\$480,378.76	\$2,937,970.89	\$439,485.08	\$96,075.75	\$587,594.18	\$723,325.99	\$29,587.43	\$1,022,996.01	\$422,732
TVA Cumberland	1	1	17,179	\$137,796.49	\$149,534.52	\$1,265,172.32	\$27,559.30	\$29,906.90	\$253,034.46	\$24,942.28	\$29,587.43	\$480,611.73	\$475,790
Jack Daniel Dist., Lem Motlow Prop., Tract II	1	1	9,319	\$105,554.05	\$117,292.08	\$688,859.36	\$21,110.81	\$23,458.42	\$137,771.87	\$24,942.28	\$29,587.43	\$260,712.07	\$127,569
Resolute FP US Inc.	1	1	12,880	\$122,531.75	\$134,269.78	\$952,326.95	\$24,506.35	\$26,853.96	\$190,465.39	\$24,942.28	\$29,587.43	\$360,337.10	\$374,580
Bridgestone/Firestone	1	1	869	\$92,949.42	\$104,687.45	\$91,324.06	\$18,589.88	\$20,937.49	\$18,264.81	\$24,942.28	\$29,587.43	\$24,297.76	\$32,238
Johns Manville	1	1	562	\$100,433.48	\$112,171.51	\$77,564.73	\$20,086.70	\$22,434.30	\$15,512.95	\$24,942.28	\$29,587.43	\$15,711.71	\$23,517
MasterCraft Boat Company Inc.	1	1	138	\$78,143.80	\$89,881.83	\$25,946.83	\$15,628.76	\$17,976.37	\$5,189.37	\$24,942.28	\$29,587.43	\$3,857.99	\$12,878
General Shale Brick, Inc. Plant # 11	1	1	158	\$79,878.45	\$91,616.48	\$29,065.87	\$15,975.69	\$18,323.30	\$5,813.17	\$24,942.28	\$29,587.43	\$4,417.52	\$13,658
<b>TVA Total</b>	<b>10</b>	<b>9</b>	<b>85,937</b>	<b>\$1,103,053.59</b>	<b>\$1,146,953.52</b>	<b>\$6,424,562.29</b>	<b>\$220,610.72</b>	<b>\$229,390.70</b>	<b>\$1,284,912.46</b>	<b>\$249,422.75</b>	<b>\$266,286.88</b>	<b>\$2,404,228.06</b>	<b>\$2,310,663</b>
<b>Bridgestone/Firestone Total</b>	<b>3</b>	<b>3</b>	<b>1,392</b>	<b>\$243,936.90</b>	<b>\$279,150.98</b>	<b>\$155,083.30</b>	<b>\$48,787.38</b>	<b>\$55,830.20</b>	<b>\$31,016.66</b>	<b>\$74,826.83</b>	<b>\$88,762.29</b>	<b>\$38,951.68</b>	<b>\$63,117</b>
<b>Jack Daniels Total</b>	<b>2</b>	<b>2</b>	<b>10,291</b>	<b>\$207,377.53</b>	<b>\$230,853.58</b>	<b>\$796,211.29</b>	<b>\$41,475.51</b>	<b>\$46,170.72</b>	<b>\$159,242.26</b>	<b>\$49,884.55</b>	<b>\$59,174.86</b>	<b>\$287,901.22</b>	<b>\$171,651</b>
<b>Johns Manville Total</b>	<b>2</b>	<b>2</b>	<b>1,037</b>	<b>\$198,569.88</b>	<b>\$222,045.93</b>	<b>\$146,831.05</b>	<b>\$39,713.98</b>	<b>\$44,409.19</b>	<b>\$29,366.21</b>	<b>\$49,884.55</b>	<b>\$59,174.86</b>	<b>\$28,997.85</b>	<b>\$44,555</b>
<b>Total Represented</b>	<b>49</b>	<b>20</b>	<b>138,398</b>				<b>\$846,183.46</b>	<b>\$535,030.17</b>	<b>\$2,293,599.69</b>				
Average No of Facilities Total in Program FY11-15		217.8											
Average No of Permits Total in Program FY11-15	258.2												
Emissions in 2014			230,292										
Total Program Percent Represented by Analysis	19.0%	9.2%	60.1%										
Total Board 15-16 Cost Represented by Analysis							11.3%	7.2%	30.7%	16.3%	7.9%	55.5%	

