

## **A Closer Examination of EPA’s Proposed Amendments to 40 CFR Part 171: Certification of Pesticide Applicators – Impacts on Texas**

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### **Abstract**

In 2015, the Environmental Protection Agency (EPA) published a report entitled “Economic Analysis of Proposed Amendments to 40 CFR Part 171: Certification of Pesticide Applicators.” The objective of this study was to assess EPA’s report; more specifically, the estimated economic impact on Texas pesticide applicators and the state. Additionally, an effort was made to replicate EPA’s economic cost calculations for Texas. For private and commercial applicators, most of EPA’s estimated costs are tied to the proposed minimum age requirement. Several economic costs were identified that were not taken into account by EPA. We contend that these should be included in order to assess the full economic impact associated with the proposed changes in regulations. For private applicators, these costs include time and travel costs to attend the proposed additional certification trainings. For commercial applicators, they include lost business revenue and associated travel cost. For the state, costs include Texas A&M AgriLife Extension Service agricultural agents’ and specialists’ time and increased travel expenses to conduct more certification trainings. As a result of this analysis, the authors developed a template that allows states to determine the economic impact (on agencies and applicators) of EPA’s proposed changes within their states.

**Keywords:** certification and training, economic costs, Environmental Protection Agency (EPA), pesticide applicators

### **Introduction**

Federal law requires applicator certification for individuals who purchase or use restricted-use pesticides. In August 2015, the Environmental Protection Agency (EPA) released the most significant proposed changes to pesticide applicator certification since the program’s inception in 1974. Along with these broad-based proposed changes to certification and recertification requirements, EPA published a report entitled “Economic Analysis of Proposed Amendments to 40 CFR Part 171: Certification of Pesticide Applicators.” This report describes the agency’s “analysis of the costs and benefits of the proposed regulatory changes governing the Certification of Pesticide Applicators to meet the requirements of Executive Order 12866 on the Regulatory Planning and Review, the Regulatory Flexibility Act as amended by the Small Business

Regulatory Enforcement Fairness Act, and the Unfunded Mandates Reform Act” (EPA, 2015a).

The purpose of pesticide applicator certification requirements and minimum standards is to ensure that restricted-use pesticides are available to those who protect food, forage, structures, health, water, rights-of-way, and landscapes while preventing unreasonable harm to human health and the environment. By developing resources and offering training events for certified applicators, pesticide safety education programs make available important pest-management tools for agricultural, urban, and other business enterprises. Without the certification and training process, restricted-use pesticides would not be available. The certification process sets in place an employment occupation type that is recognized by the Bureau of Labor Statistics (BLS, 2013).

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) put the responsibility for applicator training on the Cooperative Extension Service. FIFRA Section 23(c) states, “The administrator shall, in cooperation with the Secretary of Agriculture, use the services of the State Cooperative Extension Services to inform and educate pesticide users about accepted uses and other regulations made under this Act” (CFR, 2013).

The purpose of this paper is to assess EPA’s report; more specifically, the estimated economic costs to Texas pesticide applicators and the state. All of EPA’s economic cost calculations for Texas were replicated in this study.

### Methodology

The methodology used by EPA consists of six steps for calculating the net present value (NPV) of specified costs, using 3% to represent the social discount rate and 7% to represent the private discount rate to estimate the economic costs of the proposed changes to 40 CFR Part 171. Briefly, the six steps are:

1. Calculate the baseline cost by jurisdiction (regional costs of baseline;  $RC^B$ ).
2. Calculate the baseline cost per actor (person).
3. Calculate the jurisdiction costs of potential requirement (regional costs of proposed requirements;  $RC^P$ ) and jurisdiction baseline.
4. Calculate the jurisdiction incremental costs (regional incremental costs;  $RIC$ ).
5. Calculate the national costs of the potential requirement, jurisdiction baseline, and incremental costs.
6. Annualize the NPV for  $RC^B$ ,  $RC^P$ , and  $RIC$ .

For illustration purposes, EPA’s calculation of the NPV of regional incremental costs over 10 years is calculated as (step 4):

$$PV(RC_{r,i}^B) = RC_{r,i}^B \cdot \sum_{t=1}^{10} \frac{1}{(1 + \rho)^{t-1}}$$

Where  $PV$  is present value,  $RC_{r,i}^B$  is the regional cost of current requirement  $r$  in jurisdiction  $i$  for the baseline in time period  $t$ , and  $\rho$  is the discount rate (EPA, 2015a). The authors agree with using this methodology for this type of analysis. However, some of the data and assumptions used in EPA’s analysis do raise concerns.

Tables 1, 2, and 3 summarize EPA's estimate of the economic cost to Texas private applicators, to commercial applicators, and to state and federal agencies, respectively. The data in these tables were developed by extracting Texas data from numerous tables throughout EPA's report. These tables only include the costs of categories that have a net cost for Texas. There are many categories (around 40 for commercial) where EPA shows no net cost for Texas. These categories are not included in the tables below. In many instances, categories have no estimated net cost because Texas is already in compliance with the proposed rule change.

EPA's methodology involves calculating the current cost of the baseline scenario (for each category affected) over multiple (usually 10) years. (Some situations involve a two-year transition period; thus, proposal costs are delayed until year 3 of the 10-year timeframe.) In most cases, EPA includes estimated implementation costs that are incurred during the first two years. Proposal costs in the tables below represent the net present value of 10 years of their projected cost of the proposed changes to the categories on the left (first column). Baseline costs represent the same for the current regulations, or baseline. The net cost difference is represented in the NPV difference column. The annual cost is represented in the Annualized RIC column (EPA, 2015b). Because our replications of EPA's calculations were very close to EPA's – sometimes matching exactly – areas where slight discrepancies exist are not highlighted. There are other areas of the analysis that are of more interest.

### Private Applicators

EPA estimated the statewide net cost for private applicators at \$106,000 annually and \$938,000 over 10 years (Table 1). Most of this, \$96,000, is associated with the minimum age proposal (incremental labor).

**Table 1.** EPA's total incremental costs of proposed requirements for private applicators in Texas.

	NPV (RC <sup>P</sup> )	NPV (RC <sup>B</sup> )	NPV Difference	Annualized RIC
A. Initial Certification	\$16,597,000	\$16,577,000	\$20,000	\$2,000
B. Category Certification	\$57,000	\$0	\$57,000	\$6,000
C. PA under Supervision	\$1,054,000	\$1,047,000	\$7,000	\$1,000
D. Incremental Labor	\$2,336,000	\$1,489,000	\$847,000	\$96,000
E. Recertification	\$55,011,000	\$55,004,000	\$7,000	\$1,000
<b>Total</b>	<b>\$75,055,000</b>	<b>\$74,117,000</b>	<b>\$938,000</b>	<b>\$106,000</b>

Note: NPV = net present value (over 10 years); RC<sup>P</sup> = regional costs of proposed requirements; RC<sup>B</sup> = regional costs of baseline; RIC = regional incremental costs.

### Commercial Applicators

EPA estimated the cost for commercial applicators in Texas at \$840,000 annually and \$7.37 million over 10 years (Table 2). As with private applicators, most of this cost is associated with the minimum age rule (incremental labor). This rule accounts for \$837,000 of the \$840,000 annual cost to commercial applicators in Texas.

**Table 2.** EPA’s total incremental costs of proposed requirements for commercial applicators in Texas.

	NPV (RC <sup>P</sup> )	NPV (RC <sup>B</sup> )	NPV Difference	Annualized RIC
A. Initial Certification	\$0	\$0	\$0	\$0
B. Category Certification	\$726,000	\$726,000	\$0	\$0
C. CA under Supervision	\$13,614,000	\$13,592,000	\$22,000	\$3,000
D. Incremental Labor	\$35,817,000	\$28,464,000	\$7,353,000	\$837,000
E. Recertification	\$25,205,000	\$25,205,000	\$0	\$0
<b>Total</b>	<b>\$75,362,000</b>	<b>\$67,987,000</b>	<b>\$7,375,000</b>	<b>\$840,000</b>

**Note:** NPV = net present value (over 10 years); RC<sup>P</sup> = regional costs of proposed requirements; RC<sup>B</sup> = regional costs of baseline; RIC = regional incremental costs.

### Cost to the State of Texas

EPA estimated the cost to Texas at \$8,810 annually and \$76,800 over 10 years. Most of this cost is associated with administering exams and trainings, which accounts for \$3,600 in annualized costs for Texas (Table 3).

**Table 3.** EPA’s total incremental costs of proposed requirements for the state of Texas, other jurisdictions, and federal agencies (government entities).

	NPV (RC <sup>P</sup> )	NPV (RC <sup>B</sup> )	NPV Difference	Annualized RIC
A. Revising State Plans	\$20,000	\$0	\$20,000	\$2,280
B. Submitting Revised Plans	\$600	\$0	\$600	\$70
C. Developing Teaching Materials	\$19,000	\$0	\$19,000	\$2,160
D. EPA Costs for Reviewing Exams	\$6,200	\$0	\$6,200	\$700
<b>Total</b>	<b>\$45,800</b>	<b>\$0</b>	<b>\$45,800</b>	<b>\$5,210</b>
E. Administering Exams/Trainings	\$114,000	\$83,000	\$31,000	\$3,600
<b>Total</b>			<b>\$76,800</b>	<b>\$8,810</b>

**Note:** NPV = net present value (over 10 years); RC<sup>P</sup> = regional costs of proposed requirements; RC<sup>B</sup> = regional costs of baseline; RIC = regional incremental costs.

### Economic Costs Not Included in EPA’s Report

#### Private and Commercial Applicators

From Texas’s perspective, there are several cost areas that were overlooked in EPA’s cost estimates. The EPA report includes no cost estimates for lost business revenue and travel expenses that would result from commercial (structural and agricultural) applicators having to leave their business to attend additional trainings. Further, there is no cost estimate for the time and travel for private applicators to attend additional certification trainings.

We estimated the costs for lost business revenue, travel, and time away for private and commercial (structural and agricultural) applicators. These costs are summarized in Table 4 below, followed by a description of our methodology used in estimating these costs for each category.



% Lodging Overnight in Hotel		20	20	20	20	20
Hotel Rate (including occupancy & sales tax)		\$120	\$120	\$120	\$120	\$120
No. of Nights		1	1	1	1	3
For Overnight Stays, No. of Days Traveled		1	2	2	2	4
Per Diem (per day) for Overnight Travelers		\$46	\$46	\$46	\$46	\$46

Source: The \$51.96 average annual wage rate for private applicators was derived from the Bureau of Labor Statistics.

Note: The gray shaded cells detail the costs not applicable to the specific applicator category.

The average daily wage value of \$416 for private applicators is based on the average number of lost business days (two), an eight-hour workday, and a wage rate of \$51.96 per hour for pest-control workers, according to Bureau of Labor Statistics. While a hotel room rate and per diem cost are included in Table 5, it is assumed that no hotel or per diem costs would be incurred by private applicators. Using the data and assumptions above, the value of private applicators’ time is estimated at \$35.8 million per year; travel cost is estimated at \$991,392 per year, for a total cost of \$36.8 million (Table 6). Because there is a two-year implementation period, these costs would occur in years 3 through 10. The NPV of the costs over these eight years is \$250.9 million while the annualized cost is \$28.5 million (Table 7).

**Table 6.** Calculations for private applicators’ time.

<b>Proposed Value of Private Applicators’ Lost Time:</b>					
	Value of Time per Day	Days Lost per Year	Revenue	No. of Applicators	Regional Cost
Private Applicator Time	\$415.68	2	\$831.36	43,104	\$35,834,941
<b>Proposed Mileage Cost:</b>					
	Average Miles Traveled Round Trip	IRS Mileage Rate	Travel Cost per Applicator	No. of Applicators	Regional Cost
Private Applicator Mileage Cost	40	\$0.575	\$23	43,104	\$991,392
<b>Total Regional Costs for Private Applicators’ Time</b>					<b>\$36,826,333</b>

Note: The \$416 value for private applicator time per day is derived from Table 5.

**Table 7.** Estimated annualized regional incremental costs for private applicators.

	<b>Private Applicators</b>
Baseline Net Present Value	\$0
Proposed Net Present Value	\$250,980,301
NPV Difference	\$250,980,301
Discount Rate	3%
Annualized Rate	0.1138
Annualized RIC	\$28,565,577

**Note:** NPV = net present value; RIC = regional incremental costs.

Instead of estimating the baseline costs as EPA did in its analyses, only the additional costs of the proposal were assessed since they are additive to the baseline. Thus, the baseline costs are zero. This applies to all the analyses presented throughout the remainder of the paper.

### **Commercial Applicators – Structural Pest Control Service and Agricultural**

Another area of concern is what EPA calls “Comm Recert-01: Exam or six-hour training for commercial core competency and category recertification, at least every three years” (EPA, 2015a). For the total cost of the baseline, EPA multiplied the baseline cost per applicator (\$164.13) by the total number of existing commercial applicators (17,478) to arrive at a total baseline cost of Comm Recert-01 of \$2.86 million.

Over a three-year cycle, an applicator with two categories would need to have one additional continuing education unit (CEU) in the specific category in which he or she is licensed. The average commercial pest-control applicator has two categories (pest control and termite control). Currently, applicators are required to have two CEUs in general (Laws and Regulations, IPM, Safety, and Business Ethics) and one CEU per category (one for pest control and one for termite control) for a total of four CEUs per year. Under the current rule, 12 CEUs are required every three years for the average applicator. However, for applicators with more than two categories, the burden under the proposed regulations will quickly expand the recertification requirements. The associated business costs will escalate accordingly.

On average, the proposals would require one extra day of training per year during the three-year recertification cycle for businesses to comply. This will mean lost business opportunities resulting from being away from the business (up to \$800 per applicator per day on average, although a conservative \$500 per applicator per day was used in the estimate below), as well as added business costs (vehicle costs, fuel, possible lodging, and per diem expenses).

Considering these effects, we propose the following methodology to estimate the economic costs associated with Comm Recert-01. This involves estimating business revenue lost and travel expenses incurred due to the applicator’s absence from the business to attend additional certification trainings required by the proposed changes in regulations. The amount of revenue lost is based on average daily revenue of \$500 for

structural, landscape services, nursery, and vegetation management agricultural applicators and \$9,600 for aerial agricultural applicators. While we are not aware of any published data on gross revenue for structural and agricultural applicators, we consider these to be very conservative estimates based on our knowledge of the industry. The number of workdays lost annually used in this analysis was one day for structural; two days for landscape services, nursery, and vegetation management; and four days for aerial. Further, this analysis is based on 60 miles traveled round trip, an IRS mileage rate of \$0.575 per mile, hotel rate of \$120 per night (an assumed 20% of applicators lodge overnight), and a per diem of \$46 for structural, landscape services, nursery, vegetation management, and aerial agricultural applicators.

**Table 8.** Calculations for lost business revenue and travel costs for structural and specified agricultural applicators.

<b><i>Proposed Revenue Lost by Structural and Specified Commercial Applicators:</i></b>	
	<b>Regional Cost</b>
Structural (single day & overnight)	\$4,075,500
Landscape Services (agricultural) (single day & overnight)	\$5,656,000
Nursery (agricultural) (single day & overnight)	\$293,000
Vegetation Management (agricultural) (single day & overnight)	\$4,472,000
Aerial (agricultural) (single day & overnight)	\$21,926,400
<b><i>Proposed Mileage Cost (travel cost) for Structural and Specified Commercial Applicators:</i></b>	
	<b>Regional Cost</b>
Structural	\$281,210
Landscape Services (agricultural)	\$195,132
Nursery (agricultural)	\$10,143
Vegetation Management (agricultural)	\$154,284
Aerial (agricultural)	\$19,700
<b><i>Proposed Hotel and Per Diem Cost for Structural and Specified Commercial Applicators:</i></b>	
	<b>Regional Cost</b>
Structural	\$270,613
Landscape Services (agricultural)	\$239,814
Nursery (agricultural)	\$12,466
Vegetation Management (agricultural)	\$189,613
Aerial (agricultural)	\$62,125
<b><i>Total Regional Costs (revenue lost, mileage costs, hotel lodging, and per diem):</i></b>	
	<b>Regional Costs</b>
Structural	\$4,627,323
Landscape Services (agricultural)	\$6,090,946
Nursery (agricultural)	\$315,609
Vegetation Management (agricultural)	\$4,815,897
Aerial (agricultural)	\$22,008,225

Using these data and assumptions, lost business revenue is estimated at \$4.07 million per year for structural, \$5.6 million for landscape services, \$293,000 for nursery, \$4.4 million for vegetation management, and \$21.9 million for aerial agricultural applicators. When accounting for mileage, hotel, and per diem costs, the total regional costs are estimated at \$4.62 million for structural, \$6.09 million for landscape services, \$315,609 for nursery, \$4.81 million for vegetation management, and \$22 million for aerial (Table

8). Considering there is a two-year implementation period, these costs would occur in years 3 through 10. The NPV of the costs over these eight years is \$31.5 million for structural, \$41.5 million for landscape services, \$2.1 million for nursery, \$32.8 million for vegetation management, and \$149.9 million for aerial. The annualized cost is \$3.5 million for structural, \$4.7 million for landscape services, \$245,588 for nursery, \$3.7 million for vegetation management, and \$17.1 million for aerial (Table 9).

**Table 9.** Estimated annualized regional incremental costs for structural and specified agricultural applicators.

	Structural	Agricultural Landscape Services	Agricultural Nursery	Agricultural Vegetation Management	Agricultural Aerial
Baseline Net Present Value	\$0	\$0	\$0	\$0	\$0
Proposed Net Present Value	\$31,536,315	\$41,511,262	\$2,157,764	\$32,821,493	\$149,991,331
NPV Difference	\$31,536,315	\$41,511,262	\$2,157,764	\$32,821,493	\$149,991,331
Discount Rate	3%	3%	3%	3%	3%
Annualized Rate	0.1138	0.1138	0.1138	0.1138	0.1138
Annualized RIC	\$3,589,338	\$4,724,646	\$245,588	\$3,735,611	\$17,071,415

Note: NPV = net present value; RIC = regional incremental costs.

### Cost to the State of Texas

In the EPA's estimate of costs to states, jurisdictions, and federal agencies, the cost to Texas is \$8,810 annually. This cost comprises revising state plans, submitting revised state plans, developing teaching materials, and EPA's fees for reviewing exams. It does not include either the cost of the extra time required by Extension agricultural agents and specialists to conduct the additional certification trainings associated with the EPA proposed changes or travel costs for agents and specialists to conduct these trainings. While this additional time (two days per year) may not translate to higher salary or wage cost for the state, the time spent on certification trainings does take agents' and specialists' time away from other important educational programs. As such, the value of these professionals' time is the opportunity cost associated with the increased demand on their time. To value this proposed increased demand, the mean salary of agents and specialists (associate professor and Extension specialist titles) in Texas was used and converted to an hourly basis (Texas A&M AgriLife Extension Service, 2015). The cost of increased travel was also included. Data and assumptions used in this economic cost estimate are described in Table 10.

**Table 10.** Data for estimating costs to the state (agents and specialists).

	Agents	Specialists
No. of Agents/Specialists Affected	252	30
Mean Salary	\$55,097	\$92,000
Salary per Hour (working 225 days/year)	\$30.61	\$51.11
Average Salary/Day	\$245	\$409

No. of Additional Days of Training per Year	2	2
No. of Additional Hours per Year Required	16	16
No. of Round Trip Miles Traveled per Training	15	300
IRS Mileage Rate	\$0.575	\$0.575
% Lodging Overnight in Hotel		50
Hotel Rate (including occupancy & sales tax)		\$120
For Overnight Stays, No. of Days Traveled		3
Per Diem (per day) for Overnight Travelers		\$46

**Note:** There are no lodging or per diem costs for agents because the distances traveled are shorter (day trips).

Because of a two-year implementation period, these costs would occur in years 3 through 10. Using the data and assumptions above, the annualized cost of agents’ and specialists’ time and all travel costs was estimated at \$124,861. This cost is in addition to EPA’s cost of \$8,810.

### Summary and Conclusions

The purpose of this paper was to assess EPA’s report analyzing the economic impact of proposed regulatory changes governing the certification of pesticide applicators, focusing on the economic cost estimates for Texas. All of EPA’s cost calculations were replicated, and we found their methodology appropriate for this type of analysis. For private and commercial applicators, most of EPA’s estimated costs are tied to the proposed minimum age requirement. However, after studying the EPA report, we identified several economic costs that were not taken into account and that, we contend, should be included. For both private and commercial applicators, these include the economic cost of their time (lost business revenue) and associated travel cost of being away from their business to attend additional certification trainings. For the state, the costs include the economic costs of Texas A&M AgriLife Extension Service agricultural agents’ and specialists’ time and increased travel costs resulting from conducting more certification trainings to satisfy the proposed regulatory requirements.

EPA’s total annualized regional cost for Texas was \$954,810, which includes \$106,000 for private applicators, \$840,000 for commercial applicators, and \$8,810 for state and federal agencies. Based on our analysis, the annualized economic cost is estimated at \$28.5 million for private applicators, \$29.3 million for commercial applicators, and \$124,861 for costs to the state, for a total cost of \$58 million. These costs are in addition to the costs estimated by EPA. As a result of this analysis, the authors developed a template that allows states to determine the economic impact (on agencies and applicators) of EPA’s proposed changes within their states (McCorkle et al., 2015).

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