

TUR Planning and TUR Planners

Background Document for discussion by the TURA Ad Hoc Committee, March 30, 2021

Introduction

The TURA Ad Hoc Committee has been convened in order to review and strengthen the effectiveness and value of TUR planning to Massachusetts businesses while ensuring ongoing progress in reducing the use of toxics in the Commonwealth and increasing the adoption of safer materials. The Ad Hoc Committee has been asked to address five focus areas. This background document provides information on one of these focus areas: TUR Planning and TUR Planners.

TUR Planning: Overview

Planning is a core policy element of the TURA program. The planning requirement resulted originally from a compromise between the industry representatives and environmental and public health advocates who worked together to develop the law. In designing the law, the framers hypothesized that if facilities were subject to a robust mandatory planning provision, they would identify technically and financially feasible opportunities to reduce toxics. Facilities could then be motivated to implement these opportunities voluntarily. Thus, the planning requirement was adopted as an alternative to a more stringent approach of banning or restricting specific chemicals.¹

Experience over time has demonstrated that this hypothesis was correct, as TURA filers have consistently found ways to reduce their use of toxic chemicals through voluntary measures. This policy approach has become recognized as a best practice and has been emulated by other programs.

Planning allows facilities to select those options that are both technically and financially feasible. It also allows them to prioritize options that yield financial savings as well as health and environmental benefits.

In the planning process, facilities conduct a comprehensive review of their production processes that use regulated toxic chemicals and create a plan for reducing their use of toxic chemicals and generation of byproducts. The act of planning and identifying options for toxics use reduction can reveal efficiencies and opportunities for cost savings, resulting in both evidence and motivation to implement TUR options.

The role of the TUR Planner is essential to the planning-based model. TUR Planners are qualified through a series of steps, which can include an initial training course, continuing education, work experience, and an exam. The qualifications and dedication of these Planners are key to the success of the program and to the steady reduction in use of toxics over time. A recent [TURI video about practitioners' experiences with TUR planning](#) provides a window into planners' experiences.

TUR Planning Guidance

The Planning Guidance, developed and maintained by MassDEP, is revised periodically to address feedback from planners and to incorporate new policies or revised requirements. In 2019, TURA Program staff met informally with a small group of General and Limited Practice Planners to gather feedback on the planning process itself. These planners provided many excellent comments and suggestions on making the guidance more useful, most of which were incorporated into the [December 23, 2019 revision of the TUR Planning Guidance](#).

The guidance provides an overview of the process and its purpose, describes the regulatory requirements and associated exceptions, describes what must be included in the plan, and offers examples of individual elements of a TUR Plan. The updates to the guidance were covered in detail during a “fundamentals” session in the fall 2019 continuing education conference. As noted later in this document, interviews with a small group of Limited Practice Planners indicated that some planners do not reference the guidance when conducting TUR planning.

Planners: Qualifications and Training

General Practice Planners are certified to work with multiple businesses, while Limited Practice Planners are certified to work with just their own company. All planners are required to have 7 years of work experience in a relevant field; specific educational attainments can serve as a substitute for between 1 and 4 years of this work experience. With these work and/or educational requirements in place, an individual can follow either an exam-based or an experience-based track to become certified as a TUR Planner. An individual can become either a Limited Practice or a General Practice Planner by completing the 40-hour TUR Planner certification course and successfully passing the MassDEP exam. Alternatively, an individual can become a Limited Practice Planner by having two years of experience in TUR activities, or one and a half years of experience in TUR activities plus completion of the TUR Planner certification course. Eligibility requirements for both General Practice and Limited Practice Planners are shown in Table 1.

Table 1: Eligibility Requirements for Planners

310 CMR 50	Requirements to become a Certified Planner		General Practice TUR Planner	Limited Practice TUR Planner
52 (1)	Employment Experience		7 years’ full-time employment in specified fields is required for all TUR Planners, with the following education substitutions possible:	
52 (3)	Educational Substitution for Employment Experience (Educational program must be concentrated in specified fields)		<ul style="list-style-type: none"> • Vocational/tech certificate: 1 year • Relevant Associate degree: 2 years • Bachelor’s degree, concentration <i>directly</i> related to TUR: 4 years • Bachelor’s degree, concentration <i>indirectly</i> related to TUR: 3 years • Master’s or Doctorate, concentration <i>directly</i> related to TUR: 5 years • Master’s or Doctorate, concentration <i>indirectly</i> related to TUR: 4 years 	
54	Certification as a TUR Planner	Exam-track Procedure	Successful completion of the TUR Planner certification course and passing the exam, no more than 2 years prior to application, are both required.	
55		Through Experience in TUR Activities	Not applicable	<ul style="list-style-type: none"> • 2 full years’ experience in TUR activities OR • 1 ½ years’ experience in TUR activities <i>plus</i> successful completion of the TUR Planner Certification Course
53 (3)	Certification /Recertification Fee		\$500	\$100
58	Continuing Education	First recertification	30 CE Credits	24 CE Credits
		Subsequent recertifications	24 CE Credits	20 CE Credits

Continuing Education

Toxics Use Reduction Planners are required to earn continuing education credits on a regular basis. Total training credit requirements are established by MassDEP by regulation and are set at 24 hours and 20 hours, respectively, for General Practice and Limited Practice Planners (see Table 1).

The statute requires a two-year recertification cycle. Planners can receive 12 credit hours for attending a one-day TURA sponsored conference, so these requirements can be met by attending one conference per year. A variety of other options are also available for Planners who wish to meet their credit requirements through other activities. Credit for trainings focused on laws and regulations and regulations other than TURA, or in related professional activities, are limited by MassDEP to 4 and 8 per two-year certification cycle, respectively.

The continuing education conferences are designed to ensure that planners have all the skills and tools they need to provide maximum value to the facilities with which they work. Some of the key objectives of the conferences are to:

- Help planners maintain **planning skills**
- Alert planners to **emerging issues** (e.g., detailed information on PFAS chemicals that will likely impact future reporting and planning activities)
- Provide information on **safer materials/options**;
- Provide **peer mentoring** and **case examples** relevant to current chemical use issues;
- Alert planners to changing or potential future **regulations** (for example, each conference includes an update on TURA program changes, activities and resources)
- Connect planners to **tools and resources** designed to support their efforts.

Consistent review of fundamental planning topics and skills is especially important for planners who have never taken the TUR Planner certification course, or who took the course many years in the past. In addition to the content, conferences maintain a network of professionals who can support each other in best practices and provide access to TURA program staff.

Planners can also earn continuing education credits through other activities, such as participation in demonstration site events, taking TURI's "Beyond the Safety Data Sheet" training, or, in certain cases, participating in the online portion of the certification course as a refresher.

Table 2: Conference session topics, 2018-2020

	Industry/ Process Best Practices	Chemicals/ Emerging issues	Policy Developments	Planning/ Fundamentals	Other (including alternative planning options)
Fall 2020	<ul style="list-style-type: none"> • Successful TUR implementation 			<ul style="list-style-type: none"> • Economic evaluations 102 	<ul style="list-style-type: none"> • Safer cleaning and disinfecting • Using the new TURA data site
Spring 2020		<ul style="list-style-type: none"> • PFAS chemicals, uses and compliance 		<ul style="list-style-type: none"> • Making the most of your planning activities • Economic evaluations 101 	<ul style="list-style-type: none"> • Using Pharos to evaluate options
Fall 2019	<ul style="list-style-type: none"> • Using SDS to help guide TUR decisions • Nanotechnology applications and TUR implications • Switching to aqueous cleaning • TUR industrial stories 		<ul style="list-style-type: none"> • Regulatory drivers for TUR 	<ul style="list-style-type: none"> • Review of updated planning guidance 	
Spring 2019		<ul style="list-style-type: none"> • C1-C4 halogenated hydrocarbons with focus on refrigeration • Phthalate esters and safer alternatives for plasticizers 		<ul style="list-style-type: none"> • Best practices for process characterization 	<ul style="list-style-type: none"> • Tools to support identification of safer options • Energy conservation • Minimizing materials that contribute to solid waste
Fall 2018	<ul style="list-style-type: none"> • Identifying safer ingredients for formulated products • Working with your supply chain 		<ul style="list-style-type: none"> • Chemical security and climate change 	<ul style="list-style-type: none"> • Integrating TUR pre-planning 	<ul style="list-style-type: none"> • Water conservation • Systems for improving process efficiency (EMS)
Spring 2018	<ul style="list-style-type: none"> • 3D printing and the impact of chemical choices • Overcoming barriers to TUR implementation (case studies) • Food and beverage sector case studies 	<ul style="list-style-type: none"> • Chemicals of concern 		<ul style="list-style-type: none"> • Common planning challenges • Working with stakeholders 	<ul style="list-style-type: none"> • Materials contributing to solid waste

Table 2, above, provides a summary of the focus areas covered by these conferences during the years 2018-2020.

Feedback on CE conferences. TURI conducts a survey at the end of every CE conference, and the comments provided on those surveys serve as an important information source for understanding planners’ experiences with the TURA program’s offerings. These comments and feedback also provide information on sessions that planners would like to attend in the future and on topics that are of particular interest or concern. Selected feedback on recent conferences is shown in Table 3.

The most recent conferences were held virtually due to COVID restrictions, and attendees provided a range of comments on this experience as well. Some participants noted that they preferred the in-person format, while others said that they valued the virtual format. Participants noted that they were able to learn valuable information in the virtual format and they appreciated the time saved on commuting to the conference location, but they missed the networking opportunities that are a central feature of the conferences.

Table 3: Planner Feedback on Continuing Education Conferences

Conference value	<ul style="list-style-type: none"> • “Great info! I learned quite a bit about what to look for and what to research” • “This session will help me navigate the data and make it easier for me to obtain useful data” • “The presentation was practical and had useful recommendations that could be used in real world settings.” • “Always good to see how to do things better.” • “This has been the best (conference) yet for variety. Sometimes even a basic concept review of the meat and potatoes part of things is very helpful.” • “My first two sessions (process characterization and CFCs) were really helpful. The last session (solid waste) was interesting - but not too applicable to me.” • “This conference helped me learn about tools available to me as a planner.” • “The conference covered new products and chemicals such as hexabromocyclododecane and the C1 to C4 halogenated hydrocarbons. HF alternatives is a great topic for discussion.” • “After reading all of the biographies, I wish I had seen more of the presentations.” • “Planner / plan review could be spread out – less info per session.” • “Session A was a good review of the planning process. It was good to hear the deficiencies noted by MassDEP. It was good as a planner to hear the feedback and I can use this info to improve as a planner.” • “Three widespread sessions, all good. Definitely achieved the goal of covering different issues faced by planners.” • “Need more online training. Planners should be able to earn the required credits without a full day conf. Even live web options would be great. Session A type lecture + voting would be great live webinar.”
Advantages of virtual conferences	<ul style="list-style-type: none"> • “Really liked being able to do these in short sessions over a few days. Even without having to be at home now- this would really help when I am at work - allowing me to attend much easier. It was also helpful having that broken out - no end of the day loss of concentration and then the long drives to wherever the conference is.” • “Keeping the webinar conference format is preferable. Most people who might have a few hours to devote to a webinar might find it more difficult to devote an entire day away from their busy schedule to drive to a conference location.”
Advantages of in-person conferences	<ul style="list-style-type: none"> • “Live events are still great for interfacing with others doing this type of work. Both formats have their good points.” • “In person is much better.” • “This works well, I feel I learn just as much as in person, but still miss being in person. Networking is just not the same over a computer network.” • “Virtual format is the way to go for future sessions. They are time efficient. The only downside is the lack of networking opportunities that an in-person meeting has.”

Current Planner Universe

There are currently 115 General Practice Planners. About 27% of the active General Practice Planners have been planning for less than 10 years. The majority, however, have been planning for over 10 years, with 40% certified at least 20 years ago.

In addition, there are 63 active Limited Practice Planners, over half of whom have been planning for more than 10 years (42% have been planning for their facilities for over 20 years).

Limited Practice Planners who have been certified in the past decade are more likely to have taken the planner course than those who were certified earlier. Of the Limited Practice Planners who took the TUR Planner Certification Course, over 60% did so in the past decade.

Succession Planning. TUR Planners are the champions who help to ensure that facilities not only meet their regulatory requirements but also achieve continuous improvement over time. Since the current active planners include a significant number of individuals (about 40% overall) who have been certified for over 20 years, many of these veteran planners may reach retirement in the next 5 or so years. In this case, it is important to have a documented planning process, allowing progress to continue uninterrupted, and to ensure that ideas are not forgotten in the course of staff turnover.

Feedback from Planners: 2008-09 Program Assessment and 2019 Interviews

The TURA program gathers information from planners at each Continuing Education conference (see Table 3), and also solicits input periodically through email outreach and through informal discussion with planners. The information gathered helps to inform TURA program offerings throughout the year. In 2008-09 the program gathered information on planners' experiences in a formal TURA Program assessment effort. In 2019, program staff gathered updated information about planners' experiences through small group meetings and a series of informal interviews.

2008-2009 Program Assessment results

The 2008-2009 TURA program assessment provided a snapshot of planners' experiences and yielded insights into the elements of planning that were most useful to them. For this assessment, TURI contracted with Abt Associates Inc. to conduct a survey and interviews with TURA filers and planners. The survey was sent to all 561 facilities that had reported under TURA in 2006, and just over a third of the facilities responded to the survey. The facilities that responded to the survey represented a range of levels of experience in the program. Nearly half (45%) of the respondents had been reporting under TURA for 11 to 16 years, while the others had been in the program for fewer years.

Among other questions, the survey asked filers and planners which of the six Toxics Use Reduction (TUR) techniques they had used at any point.^a The survey found that facilities were using all six of the techniques, although at varying frequencies. Over 60% of the respondents had undertaken improved operations and maintenance. Input substitution and recycling, reuse or extended use of toxics had been used by slightly under half of respondents. Other options were used by a third or fewer of respondents.² This information helped to inform additional training activities in subsequent years. The following table, excerpted from the program assessment, shows the percentage of respondents that used each TUR technique.

^a Six TUR techniques are defined under TURA: improved operations and maintenance; input substitution; recycling, reuse, or extended use of toxics; product reformulation; production unit modernization; and production unit redesign or modification.

The survey also gathered information on benefits from planning as experienced by facility representatives and planners. These benefits are summarized in second table shown on this page, also excerpted from the program assessment. Just over half of the respondents reported experiencing benefits related to “increased management attention to environmental practices” and “improved worker health and safety” (55% and 51% of respondents, respectively)².

In addition, the survey gathered information about barriers to successful TUR associated with the planning process. Slightly less than a third of General Practice Planners responding to the survey noted that perceived lack of sufficient benefits was a barrier; and a similar proportion of General Practice Planners indicated that TUR was given low priority by management. Some also cited limitations related to lack of commitment from a parent company, which in turn affected the individual facility’s ability to move forward on TUR.²

The survey also gathered information on the extent to which Planners and facilities find new TUR options from a first, second, or later planning cycle.³ The survey found that 70% of respondents “always” or “usually” found new TUR opportunities or options in their first planning cycle. For later cycles, the numbers were lower. Thirty-six percent indicated that they “always” or “usually” found new TUR opportunities in their second planning cycle, with another 34% indicating that they “sometimes” found these new opportunities. For subsequent planning cycles, just 4% said that they “usually” found new opportunities, and 23% said that they “sometimes” found such opportunities.³ These findings relate specifically to identifying new opportunities, and do not reflect other aspects of planning, including the evaluation of previously identified TUR options in subsequent cycles.

Feedback from Planners: 2019 Small Group Discussions and Telephone Interviews

The TURA program met informally with a small group of Planners in the spring of 2019 to hear their thoughts on the TUR planning process and to solicit their input on updates to the planning guidance. The guidance document is provided by MassDEP to help planners ensure they are complying with all elements of the regulation.

This effort was much smaller in scale than the earlier program assessment, and the interviews did not cover as broad a sampling of planners. However, it provided a useful means to update findings from the program assessment, and to gather information about planners’ needs,

Toxics Use Reduction techniques employed.

TUR Technique	Percentage (of 196 respondents)	Examples ^a
Improved operation & maintenance	63%	Installation of a temperature-controlled storage room to extend the shelf life of raw materials.
Input substitution	46%	Replacement of all uses of n-hexane with safer substances. “It took a long time to find and approve all the new formulations, but the replacement is now complete.” Facility was able to stop reporting under TURA as a result.
Recycling, reuse, or extended use of toxics	46%	Implementation of a zero-discharge nickel/chrome recycling system.
Product reformulation	34%	Reformulation initiatives to (a) reduce phenol in resins from 17% to 6%, and (b) reduce use of formaldehyde. As a result, the facility dropped below the TURA reporting threshold for formaldehyde.
Production unit modernization	29%	Creation of “a new vapor etch machine that cut chemical use by 80 percent.”
Production unit redesign or modification	28%	Moved parts washing from manual, solvent-based to mechanized, aqueous-based process.
Don't know	7%	

Tables excerpted from 2008-09 Program Assessment

Benefits experienced as a result of implementing TUR projects in the period 2000–present.		
Benefit	Responses	Percentage (of 196 Respondents)
Increased management attention to environmental practices	108	55%
Improved worker health and safety	99	51%
Financial savings	81	41%
Compliance with other state or federal regulations	64	33%
Improvements in production efficiency	57	29%
Improved product marketing	41	21%
Improvements in product quality	33	17%
Improvements in technology and physical infrastructure	30	15%
Compliance with international standards	22	11%
Improved worker–management relations	21	11%
Other	18	9%
Improved community relations	16	8%
Retention of a product line	12	6%

priorities and challenges. The participants in the small group were equally distributed between General and Limited Practice Planners. To add to knowledge gained through the small group discussions, following the series of informal meetings, TURA program staff conducted phone interviews with 20 Limited Practice Planners.

The small group discussions focused on several topics, including benefits of TUR planning, challenges associated with TUR planning, and improvements to the planning guidance document. The TURA program took much of the feedback from this informal group in developing the 2019 revision of the TUR Planning Guidance.

The interviews conducted with Limited Practice Planners included a number of questions about their experience with the planning process. This included information about use of the planning guidance; information on how they approach the elements of planning; information on their choices about plan implementation; and the most and least useful parts of the process.

The information below is drawn from both the small group discussions and the interviews.

Use of Guidance Document. General Practice Planners often reference the planning guidance when working with a company, so they were able to provide extensive feedback on the guidance. In contrast, more than half of the Limited Practice Planners interviewed said they do not use the guidance document. Some look for updates but mentioned that finding the updates is not always straightforward. One Planner mentioned that other than looking at the guidance periodically, the planner “gets more” from the regular conferences, noting that there are invariably opportunities to review parts of the planning process, and opportunities to gather ideas to bring back to the facility. Another planner appreciated the examples present in the guidance but mentioned that having a more interactive guidance (rather than a static pdf) would be a good innovation. Several planners commented that because their operations have not changed substantially, they feel that there is little opportunity to improve on their initial planning methods.

Planning experience. Planners were asked about their planning process in general and most mentioned the importance of developing a cross-functional team to work with in their planning effort. A few mentioned that they do not receive many suggestions for TUR as a result of the employee notification process. One planner noted that asking for ideas during regular safety meetings leads to more input from employees. When a small incentive (such as a gift card) is offered to employees with ideas, planners found they got better results. Planners also noted that engaging their vendors is a good tool for identifying possible opportunities for TUR.

Some planners noted that they have gotten particular value from taking the planner training course. One planner chose to take the course twice, in order to learn more and have a second opportunity to discuss principles and ideas with peers.

The interviewees indicated that the planning process can take anywhere from a few days (for a facility with no changes in operation or use of chemicals, treating the process as a formality rather than an opportunity) to several months, engaging many different stakeholders, looking for new opportunities in good faith (“making it work for them”) and incorporating the process into other sustainability efforts. Many planners mentioned that planning is more difficult as the years go on, after the “low-hanging fruit” have been identified and the opportunity for creative engagement seems to dwindle. One Limited Practice Planner stated that they found the process to be very complicated and noted a special frustration with the electronic submission process.

Benefits and challenges. As shown in Table 4, benefits of TUR planning included organizational benefits, such as increased employee and management awareness of environmental issues associated with the use of toxics; and economic benefits, such as reducing costs associated with

hazardous waste management. Challenges included administrative difficulties, problems identifying TUR options, and difficulty completing specific TUR plan elements. Several of the benefits and difficulties cited were similar to those that had been identified in the earlier program assessment.

Table 4: Benefits and Challenges of TUR Planning (group discussion and interviews, 2019)

Most Beneficial Aspects of TUR Planning	<p><i>Organizational benefits:</i></p> <ul style="list-style-type: none"> • Being prompted to keep TUR foremost in our practices • Improving employee and management awareness of environmental issues associated with the use of toxics • Reassessing processes with stakeholders to gather new ideas for TUR • Stretches our thinking about our various operations • Strengthens internal teamwork and commitment • Makes the workplace safer • Improves competitiveness, including staying ahead of future restrictions • Improves understanding of the current process and any changes that may have been made <p><i>Technical and economic benefits</i></p> <ul style="list-style-type: none"> • Identifying cost reduction activities • Reducing burden on management of hazardous waste, including in our wastewater pretreatment system • Focus on source reduction helps in identification of opportunities to reduce chemical use and increase efficiencies • Identifies points of inefficiency that might have otherwise been missed • Encourages innovation towards safer formulations
Most Challenging Aspects of TUR Planning	<p><i>Difficulties related to lack of TUR options:</i></p> <ul style="list-style-type: none"> • Finding new solutions for chemical uses that are essential to our process/product • Having to continue to plan for “less hazardous” chemicals like acids and bases used in neutralization processes • Customer resistance to change in products <p><i>Difficulties with specific planning elements</i></p> <ul style="list-style-type: none"> • Determining the cost of toxics • Keeping track of all the numbers and being consistent • Understanding the complete chemical flow through our process, particularly when using multiple products that contain reportable chemicals • Assembling the right TUR team members • Following through on TUR commitments <p><i>Administrative challenges</i></p> <ul style="list-style-type: none"> • Aligning the planning effort with the Plan Summary form on eDEP • The time required to do a good faith effort (especially materials accounting and process flow diagramming) • Planning cycle is too short, not in alignment with other regulations and financial planning • Validating the completeness and quality of data provided • Maintaining management’s commitment to the process • Impact of TUR changes on other regulatory requirements/permits

As noted above, the program assessment provided a broad sampling of the full universe of Planners, while the 2019 small group work and subsequent interviews were geared toward identifying opportunities for improvement through in-depth conversations with a smaller number

of Planners. In both cases, the feedback provided was used directly to inform program activities, including written guidance and Continuing Education offerings.

Review of Plan Quality

As discussed in the background paper on Compliance and Enforcement, MassDEP periodically conducts desk audits of selected TUR plans. In a desk audit, selected facilities are required to submit their entire plan to the Agency for review. As noted previously, desk audits help to ensure that facilities fully understand and are completing all the elements of the planning process. TUR plan deficiencies noted by MassDEP in these audits include incomplete economic evaluations, incomplete process characterization, incomplete or missing documentation, and lack of an implementation schedule. This small sampling of TUR plans indicated a wide range of overall planning quality.

One finding noted by the TURA program in these detailed reviews of submitted plans was that numerous additional opportunities for TUR could be identified. For example, one of the plans submitted during the most recent desk audit showed that the facility was using a number of TURA chemicals under threshold; this pointed to an opportunity for additional work with the program to help eliminate these chemicals. In addition, the plan showed that there were potential areas for additional work on solvent substitution at the facility.

Outcomes of Planning

Many TURA filers have attested to the value of planning. The experiences of some of these facilities were highlighted in a TURA 25th Anniversary publication; selected examples are shown below.

Some facilities credit the planning process with keeping them in business under changing market conditions. For example, Columbia Manufacturing credited planning and their work with OTA with survival of the business over time:

“As a small business, it was a big risk for us to change our manufacturing line but I’m proud to say that with the guidance of the Office of Technical Assistance, we expanded and upgraded our plating line. We would not be in business today without the improvements we made to reduce water use, chemical use, hazardous waste and wastewater.” -- Ali Salehi, Senior Vice President, Columbia Manufacturing

Others have described a broad set of benefits encompassing workers, customers, community, and corporate culture:

“Making environmental improvements, reducing toxics use and saving energy has saved us money, making us more competitive. But something more subtle is that we stand out among our suppliers, customers and community. We keep our small facility clean, our factory is low impact, our people enjoy working here and it all pays off.” -- Robert Audlee, Vice President, Stainless Steel Coatings

“Constant improvement is embedded in our culture and it stems from the TURA planning process. When we first started reporting toxic chemical use and submitting plans to the state 25 years ago, we were fulfilling a requirement. But now, by using safer materials we are viewed as a leader by our customers and are protecting worker health and saving money in the process.” -- Charlie Flanagan, CEO and President, Independent Plating

“Since we started working with the Office of Technical Assistance in 2005 and analyzing their recommendations to use solvents more efficiently, we’ve experienced benefits beyond what we had predicted. Toxics use reduction is a tool that we use continuously in our facility because we’ve found that the benefits are extensive – we are protecting worker health and the environment, improving efficiencies and saving money.” -- Anuj Mohan, Chief Operating Officer, Chemgenes

In a 2017 report, the TURA program reviewed the competitiveness impacts of TURA planning among a set of businesses in several sectors. Table 5 summarizes the experiences of selected businesses highlighted in the report.⁴

Table 5: Competitiveness Impacts of TURA Planning: Selected Examples⁴

Sector	Business	Key project aspects
Decorative chrome plating	Columbia Manufacturing	<ul style="list-style-type: none"> • Annual savings over \$1 million. • New plating line tripled plating capacity; helped the company to remain competitive and stay in business.
	Independent Plating	<ul style="list-style-type: none"> • Annual savings of \$15,000 from HCl reduction; annual savings of \$8,500 from HF substitution; annual costs of \$20,000 from trivalent plating line. • Savings from cyanide and cleaning solvents reduction not quantified. • Ability to offer trivalent option to customers that prefer this option.
Medical devices and biotechnology	Siemens Healthineers	<ul style="list-style-type: none"> • Identified safer surfactant to replace chemical targeted for regulation in EU.
	ChemGenes	<ul style="list-style-type: none"> • Annual savings of \$46,900. Savings from initial project provided both momentum and financing for a second project. Savings facilitated business growth.
Paints and coatings	Stainless Steel Coatings	<ul style="list-style-type: none"> • Financial savings: \$15,160 annually for hazardous waste; \$1,440 for energy. • Substituted safer compound without a change in costs, retaining product line valued at 8-10% of sales and maintaining competitiveness in EU.
	Franklin Paint	<ul style="list-style-type: none"> • Financial cost: \$123,000 annually. • Business grew over 65% over five years.
Electronics	Analog Devices	<ul style="list-style-type: none"> • Financial savings: hundreds of thousands of dollars saved over 10-year period; sample project yielded annual savings of \$35,000 plus 100 person-hours. • Positive environmental image; momentum for continuous improvement.

Questions for Discussion

The following questions will be presented to aid discussion at the March 30 meeting:

Value of planning

- In addition to benefits identified in this document, do you have observations on the value of TUR planning for newer filers and for companies that have been filing for decades?
- How can TUR planning support other company priorities, such as worker health, public health, community relations and overall company competitiveness?

Evaluation of plan quality

- What else can the TURA program do to ensure that all planning is high quality (both the plan and the planning process)?
- Are there innovative ways in which the TURA program can engage with filers to improve plans and help identify options? Consider additional TUR opportunities that could be addressed, as well as perceived barriers to TUR.

Developing and maintaining planners' skills

- What additional services could the TURA Program offer to help planners develop and maintain their skills?
- What are your thoughts on the range of topics outlined in Table 2? What are the strengths and weaknesses of the training currently required for planners? What additional training offerings would be most helpful?

Planning guidance and planner (re)certification

- How can the TURA Program improve the value of the planning guidance?
- What are the advantages and disadvantages of the statutory 2-year recertification cycle? What might the impact on planner or plan quality be if the cycle were changed?

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