NEWS FOR THE ENVIRONMENTAL PROFESSIONAL

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Photo: Debora A. Looney "Least Tern Nestlings"

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NEWS FOR THE ENVIRONMENTAL PROFESSIONAL

Newsletter of the National Association of Environmental Professionals

News for the Environmental Professional aims to provide stimulating research and commentary on significant environmental issues, and publishes papers that reflect the highest standards of professional work on questions linking environmental science and policy. It is published by NAEP in February, May, August and November. Deadline for submissions is the end of the month prior to publication — for example, the deadline for the February issue is January 31.

NOTE: Membership in the NAEP includes a subscription to *News for the Environmental Professional*. For more information on membership, visit www.naep.org.

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PRESIDENT'S LETTER TO MEMBERS

NAEP Update – December 2016

I hope everyone is enjoying the holiday season. It is hard to believe we are moving towards the end of 2016 and the start of a new year. This past year has been a busy time for NAEP and the Association has been making great progress towards many of the goals we had set in 2015.

The 2017 Conference Planning Committee is busy planning the March 27-30, 2017 conference that will take place in Durham, North Carolina. The North Carolina AEP and NAEP volunteers are working very hard to put together a great program. In this issue of the newsletter is information on the sessions as well as Sponsorship and Exhibit opportunities at the conference. Excellent training sessions are being offered on Monday, March 27. In-depth NEPA training will be available all day, as will sessions on Air Quality. The Air Quality segments can also be taken as half-day session(s), as can sessions on Ecosystem Services and Wildlife Habitat. Join us on Tuesday, March 28 for the NAEP Welcome and Planning Session. Co-presenters will be Tim Profeta and Tom Earnhardt, two of North Carolina's most recognizable environmental experts. Ted Boling will be presenting at our lunch session on Tuesday, March 28. See the Schedule at a Glance for the day-by-day outline of concurrent sessions and tracks. Four concurrent oral sessions in each of the time frames will be supplemented by off-property tours on Tuesday, Wednesday, and Thursday. The tours will encompass Ecosystem Restoration, Brownfields, Duke University's Stream and Wetland Assessment Management Park, and a Duke Forest Tour. Other highlights of the 2017 conference will be the Networking Welcome Reception on Monday night, the President's Event on Tuesday, and the Dine Around Durham Wednesday evening. The conference will be held at the Durham Convention Center which is conveniently linked to the Durham Marriott City Center Hotel, the headquarters hotel for the conference. We look forward to seeing you in Durham!

The 2015 NEPA Annual Report has been made available to NAEP members. This report is one of the most valued benefits of NAEP membership. This 2015 report is a continuation of ongoing efforts by environmental professionals to increase awareness of the state of the NEPA practice and it's potential. It is produced annually by the NEPA Practice Group, an all-volunteer committee of the National Association of Environmental Professionals (NAEP). NAEP tracks developments at the national and state levels in the practice of impact assessment. This year's Guest Editorial is from Horst Greczmiel. Mr. Greczmiel recently retired after serving 17 years as Associate Director for NEPA Oversight at the Council of Environmental Quality. Mr. Greczmiel reiterates the role of NEPA in sound decision making and the need to protect and strengthen its most valuable aspects. These aspects include public involvement and careful consideration of reasonable alternatives.

The December 2016 issue of Environmental Practice was distributed to NAEP members in November 2016 and a link to this issue of the journal and past issues is available on the NAEP website. Please take the time to review this important publication.

I hope this message really showcases the great work NAEP is doing. NAEP can provide the great benefits we offer due to our excellent and dedicated volunteers. If you are interested in getting more involved, I would be happy to speak with you about the various opportunities and help find the right fit for you. Please contact me at president@naep.org at any time.

Yours in service,

Brock Hoegh, CEP
NAEP President

J. Peyton Doub, PWS, CEP. *Peyton is an Environmental Scientist and Terrestrial/Wetland Ecologist with the US Nuclear Regulatory Commission. He has over 25 years of experience in NEPA, particularly with respect to wetlands, forests, wildlife, and terrestrial ecology. Mr. Doub recently authored a book with CRC Press titled "The Endangered Species Act: History, Implementation, Successes, and Controversies". Mr. Doub has contributed to dozens of environmental impact statements, environmental assessments, and other environmental planning documents, most recently for a series of proposed new nuclear reactors. He is a frequent speaker at NAEP conferences and has published several articles on wetlands and NEPA.*

Mitigation — Is It Really the Primary Value of NEPA?

The word "mitigation" and its inflected forms (e.g., "mitigate") do not appear in the NEPA statute. Was that an oversight? Is the role of mitigation in the NEPA process a newer development, perhaps an outgrowth of the Council on Environmental Quality's (CEQ's) formal definition of "mitigation" in their NEPA regulations[1] first introduced in 1978? Is it perhaps the outgrowth of court cases addressing mitigation, such as the landmark *Robertson v Methow Valley Citizens Council*[2]? Or is it simply a logical progression from decades of NEPA practice: after going to such extensive lengths to meticulously describe the potential environmental impacts of a proposed action and its alternatives, doesn't it make sense to follow through and actually do something to head off adverse effects from a chosen action? Is mitigation where the public, not just the scientists and attorneys and contractors, finally benefit from the tax dollars allocated to a NEPA effort? Or is what we term "mitigation" merely the most highly tangible and visible element of a complex web of mostly intangible benefits driving Federal decision-making in subtle, perhaps even subconscious, ways?

Background

As a furloughed Government scientist in October 2013, I started to ask myself whether my 25-plus years of dedicated efforts to be the best possible NEPA practitioner actually benefitted anyone[3]. Was our country actually better off because we have NEPA? Was my salary worth it to the people I serve? There are certainly those, both among the public and the politicians serving that public, who question the expense of NEPA, both in terms of the direct financial cost and the more indirect opportunity costs incurred by the necessary project delays to carry out NEPA. I came to the self-realization that my NEPA efforts likely did substantially benefit the public, but in intangible ways that are not only impossible to quantify but even impossible to know. Properly executed, the published environmental impact statement (EIS) or environmental assessment (EA) is merely the final most formal step of a long and usually convoluted planning process involving a myriad of component decision steps, each made in a thoughtful, informed, transparent manner. That EIS or EA can be thought of as a diploma; just as a diploma formally signifies the conclusion of a long educational process, the EIS or EA signifies the conclusion to a long planning process. To extend the education metaphor, the EIS or EA could be thought of as a thesis, dissertation, capstone paper, or final exam formalizing the conclusion of a long planning process comprising sequences and layers of interrelated decisions all leading to eventual selection and implementation of an action. In either perspective, the real value of an education lies in the learning process, not in the certificates or papers signifying the completion of that process.

Contemplating the value of NEPA further, I pondered beyond just the benefits of informed decision making. I came to view NEPA as a distinctly American contribution to a worldwide movement toward thoughtful, informed environmental decision-making; now many other countries have emulated in full or in part the objectives of America's NEPA. I realized that NEPA was a natural outgrowth of our two-century plus experiment with democracy — NEPA is Environmental Democracy[4]. NEPA gives the public a voice in the decisions that its elected government makes that affect the environment. Informed decision-making is only one of NEPA's great benefits; transparent decision-making is the other great benefit.

In neither of those articles have I, at least directly, addressed mitigation. But as anyone contemplates the value and benefits of NEPA, surely mitigation must come to mind. My position is that mitigation is indeed one value of NEPA. But one must be careful not to surmise that the activities formally designated as mitigation constitute the only, or even the principal, contribution of NEPA to society's benefit. It is easy to scan many EISs or EAs and identify specific mitigation measures, then proclaim that at least some tangible benefits have emerged from a long and costly sequence of research and documentation. But while praising the obvious benefits of mitigation, one must be careful not to overlook other, more subtle benefits that ultimately derive from the NEPA process. If one examines the concept of mitigation closely, one realizes that mitigation is not some isolated byproduct emerging from a seething cauldron of planning and documentation efforts. Instead, impact reductions are conceived and proposed throughout the planning and documentation process. One realizes that it is impossible to fully separate the process of identifying possible mit-

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Mitigation *Continued from page 4*

igation measures from earlier NEPA processes such as identification of the proposed action, identification of alternatives, scoping, and identification of impacts. In fact, mitigation really is a subcomponent of what the Council on Environmental Quality (CEQ) has identified as the "heart" of NEPA — comparing alternatives[5].

What is Mitigation?

To characterize the essence of mitigation, I recommend first reviewing how CEQ addresses it in the Regulations[6]. CEQ states that "mitigation" includes:

a. Avoiding the impact altogether by not taking a certain action or parts of an action.

b. Minimizing impacts by limiting the degree or magnitude of the action and its implementation.

c. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.

d. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.

e. Compensating for the impact by replacing or providing substitute resources or environments.

CEQ's five-element definition of mitigation closely parallels the three-element mitigation "sequence" advocated by the U.S. Environmental Protection Agency (USEPA) and U.S. Army Corps of Engineers (USACE) for impacts to wetlands and other waters of the United States under Section 404 of the Clean Water Act[7]. This sequence involves first considering opportunities to avoid wetland impacts, then considering opportunities to minimize wetland impacts, and finally, only once any reasonable and practicable avoidance and minimization opportunities are exhausted, considering opportunities for compensatory mitigation. Most environmental scientists are familiar with the wetland restoration and creation projects, and more recently the wetland mitigation "banks", established to offset wetland impacts. But those compensatory projects are only utilized following a consideration of opportunities to avoid or minimize wetland impacts[8]. Do not underestimate the beauty of our current approach to mitigation, despite its obvious imperfections; consider the consequences if NEPA shifted from its current emphasis on examining opportunities for avoidance or minimizing environmental impacts (sometimes characterized as a "hard look") to a simpler one in which environmental impacts could be immediately sanctioned through a currency of payoffs into mitigation banks or other compensatory venues.

The order of CEQ's mitigation elements clearly indicates that CEQ has the same "sequencing" preference as USEPA and USACE. Avoidance is Item a; minimization is Item b. Items c, d, and e can be thought of as all falling under the umbrella of compensatory mitigation. Indeed, the USEPA and USACE express a preference toward compensatory mitigation that involves preserving or restoring former wetland sites (hence, use of the terms "rectifying", "repairing", "rehabilitating", and "restoring" itself in Item c and "preservation" and "maintenance" in Item d). Sequencing is a common thread that emerges in both approaches to mitigation. Sequencing is inherently logical; who wouldn't want to first look for ways to avert the need for mitigation before committing to undertake the associated cost, effort, time, and (perhaps most of all) risk of actually implementing mitigation.

When Does Mitigation Begin?

NEPA practitioners have traditionally thought of a linear progression from impacts to mitigation: first, an action causes an adverse environmental impact, and, second, an agency implements a mitigation measure to offset that impact. In fact, the process is not so simple, especially with respect to the "avoidance" and "minimization" elements of mitigation that are favored. Before a Proposed Action or an Alternative is even subjected to environmental impact assessment, it must be formulated and described. Ideally, the interdisciplinary environmental impact assessment team has an opportunity to interact with the engineering design team before an EIS or EA effort is ever initiated. During that time, impact assessors may point out minor changes to a design to avoid sensitive environmental resources or reduce effects to those resources. For example, it may be possible to route a temporary access road around a tree or wetland, use construction machinery that generates less noise, or use a stabilization seed mix that uses native grasses or forbs in lieu of fast growing fescues. Decisions to incorporate such elements into the design of an action obviates the need for subsequent mitigation – the mitigation has instead become integrated into the actual action. These planning victories, so beneficial to the environment, may never reach the pages of an EIS or EA written subsequent to the action's formulation. But they are no less a beneficial outcome than if they were presented as some type of remedial activity labeled formally as mitigation.

Recall in my 2014 article what I referred to as the "Type B" benefits of NEPA: those decisions to reduce environmental impacts made in anticipation of NEPA but never directly documented in the EIS or EA. These contrast with the more direct "Type A" benefits, which include the formal mitigation measures outlined in the NEPA documentation. Much in the way of environmental impact reduction is commonly achieved as byproducts of the NEPA planning process; the reductions are often achieved in the *anticipation* of needing to complete NEPA documentation rather than arising directly out of the documentation process.

Mitigation as an Alternative

If someone planning a project considers modifying that project to avoid some impact, what are they essentially doing? Or what if someone considers making a modification to reduce that

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impact? Or, finally, what is someone doing if they consider incurring an impact and following it with an action to offset that impact. The answer is intuitive if not obvious — they are considering Alternatives. And, what does CEQ identify as the "heart" of an EIS? Alternatives. Think of completing an action plus an associated mitigation measure as an alternative to merely taking the same action followed by no mitigation. Too often, NEPA practitioners think of alternatives as discreet separate actions, such as choosing different sites for an action, or different technologies. These are what most EISs and EAs formally identify as "Alternatives". They may be thought of as Macro-Alternatives. But within the purview of each of these Macro-Alternatives, one may encounter opportunities to carry out the action in just a slightly different manner. For example, one may see an opportunity to alter the shape of a parking lot to avoid a wetland or mature forest. One may alter an engineering design to call for a shield to deflect light from a natural area, thereby minimizing exposure of sensitive wildlife to unnatural light sources. Instead of merely abandoning a construction laydown area after it is no longer needed, one may see an opportunity to replant forest or grass cover. These may be thought of as Micro-Alternatives, each associated at a subordinate level to a higher-level Macro-Alternative (or the Proposed Action). Notice the use of words such as "avoid", "minimize", and "restore": are these not part of the vocabulary of Mitigation? The line between identifying Alternatives and Mitigation is blurry, perhaps absent.

Consider a project as a linear sequence of actions, each essentially a vector with a magnitude (severity of impact) and a direction (type of impact). Each vector terminates at a point from which multiple possible subsequent vectors radiate, each pointing in multiple directions. Each point is essentially a decision point, and each vector radiating from that point is an alternative. EISs typically present three to five formal "Alternatives", but each of those Macro-Alternatives comprises numerous possible rounds of decision among Micro-Alternatives. One might first consider the possible use of an alternative site (a Macro-Alternative, formally labeled as an Alternative in an EIS), but then consider possible orientations and sizes for a parking area, routes for an access road, and seed mixes for stabilizing exposed soils (all Micro-Alternatives that are essentially forms of avoidance and minimization mitigation). One's mind may then focus on opportunities to place temporary fabrics over wetland soils to reduce compression, building passages under roadbeds to allow passage of wildlife, planting tree screens to improve aesthetics, or establishing butterfly gardens to offset loss of habitat for rare local insects (all Micro-Alternatives that are essentially forms of compensatory mitigation). No usably concise EIS can even begin to document each and every possible Micro-Alternative, nor should it strive to do so, except perhaps in list or bullet form. But if NEPA is a planning process rather than simply a documentation process, one can recognize the importance of good interim decision-making among the Micro-Alternatives even if textually documenting only the Macro-Alternatives. The most beneficial outcome from the overall NEPA process may not derive from informed selection among a few Macro-Alternatives noted in the Table of Contents to an EIS but instead derive cumulatively from numerous good decisions among possible Micro-Alternatives.

It seems to be somewhat unfortunate that NEPA practice has gravitated over the years to having a separate "Mitigation" section in each EIS or EA. Most EISs address Mitigation and Alternatives separately when in fact they are inseparable parts of the same. The separate sections leave no doubt that the preparing agency(ies) considered both Mitigation and Alternatives, but in doing so, they almost force themselves to overlook the integrated nature of each. Such is also the case with Cumulative Impacts; such impacts are usually addressed in a separate dedicated chapter (that prominently advertises the fact that Cumulative Impacts were indeed considered) when in fact logic suggests a need for a single concise and integrated assessment of direct, indirect, and cumulative impacts.

Regulatory Mitigation versus Optional Mitigation

Most NEPA practitioners, if asked to categorize mitigation measures, will assign each to one of the CEQ categories, especially those of avoidance, minimization, and compensatory mitigation. But there are other ways of categorizing mitigation. Perhaps one of the most relevant addresses whether the mitigation measure is one specifically required by regulation or one proposed outside of the context of environmental regulation. For example, the use of best management practices during site preparation work to prevent erosion and sedimentation is required under various Federal, state, and/or local regulations. It is mitigation, but mitigation forced on the action agency. It will be required independent of, and regardless of, the NEPA process. On the other hand, a mitigation measure calling for planting a tree screen to soften the appearance of a new facility from an adjoining neighborhood or parkway would not be required under Federal regulations or those of most states or localities. It may be a very beneficial mitigation measure, but it is not driven by specific regulatory requirements. It may be thought of as voluntary, although public pressure exerted through the NEPA process may drive it even if the action agency considers it superfluous.

The distinction between these two forms of mitigation is by no means strictly academic. While all Federal agencies are required to comply with Federal regulations, and most strive to comply with relevant states and local regulations, agencies whose mandates are not specifically environmental may have difficulty justifying the use of public funding for mitigation not driven by regulatory requirements. This may be especially true for agen-

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cies preparing EISs or EAs for actions by private entities to whom they issue permits or licenses. The licensing agency can expect that the private entity will perform mitigation driven by specific regulatory requirements but may lack the jurisdictional power to force the entity to perform non-regulatory, essentially voluntary, mitigation. In its 2011 guidance on the reliance on mitigation measures when supporting a Finding of No Significant Impact, CEQ cautions that "agencies should not commit to mitigation, however, unless they have sufficient legal authorities and expect that there will be necessary resources available to perform or ensure the performance of the mitigation."[9] Remember that NEPA is a process requiring a "hard look" at reasonable alternatives, but it does not establish a requirement to select the most environmentally advantageous alternative. If mitigation falls essentially within the domain of alternatives evaluation, then NEPA gives a licensing agency no power to require mitigation merely because the NEPA process indicates the utility of that mitigation. The agency is certainly correct to analyze the mitigation in an EIS or EA, but it is not necessarily empowered to require the implementation of that mitigation.

From another perspective, one might classify mitigation as either remedial or structural. I have invented these terms, but the concepts are intuitive. Environmental mitigation is typically thought as remedial: one restores wetlands elsewhere to offset the loss on a project site, one pays into a conservation fund to offset loss of habitat for an endangered species, or one adds a turning lane to offset increased traffic at the entrance to a project site. The general theme is simple; an adverse impact is contemplated, and then an appropriate fix is pondered. Even avoidance and mitigation can be remedial. One notices that a new road would cross a wetland and one moves its routing away. But mitigation can also be structural – think of it as mitigation that is "built in" to the design. For example, the size of a power plant is reduced to better match actual power demand (can be thought as a type of minimization). Or consider that the sites commonly considered in a typical power plant siting study rarely occur in densely populated urban areas or exclusively in an area of wetlands or steep slopes (a type of avoidance). These mitigation strides are important, but they are rarely called out specifically as mitigation or even mentioned in an EIS. But they are no less valuable, and they are no less attributable to NEPA. Again, these are the unsung "Type B" benefits of NEPA, taken more in anticipation of NEPA rather than directly in the process thereof.

Summary

If there is one takeaway message it is this: mitigation is an ongoing process, an inseparable element of NEPA that cannot be easily compartmentalized under the term "mitigation". Mitigation is a normal, expected outcome of NEPA, but it does not always come labeled as such. The NEPA process does lead to important environmental benefits, but not all of those benefits are neatly tagged as mitigation. The environmental benefits of NEPA do not emerge as a deluge concurrent with the documentation. Instead they emerge as a steady stream of informed decision-making beginning in the early stages of project conceptualization until the project is fully implemented. NEPA is more of a way of thinking than a prescriptive process.

Now if the EIS (or EA) serves to concisely memorialize what is essentially a long and complex planning process, one might consider a few obvious actions to improve communication with the public. First, one might move the Mitigation discussion out of its own pigeonholed chapter or section and integrate it into the Alternatives section. More substantively, one might then expand the mitigation section to point out at least a few of the innumerable decisions among micro-Alternatives that took place over the course of the planning process. For example, if during an early multi-disciplinary planning roundtable discussion a wetland scientist or terrestrial ecologist pointed out to the project engineer that an access road could be routed with fewer impacts through a lawn than a forested wetland, that information exchange could be noted. Such notes could be presented as a list of brief bullet points that need not substantially increase the length of the EIS. Doing so may go a long way toward more visibly demonstrating the value of NEPA to its critics, who often see only the costs embodied by a cumbersome document but struggle to see the myriad of benefits that emerge subtly over the course of the project. ■

1 40 CFR 1508.20

2 490 U.S. 332 (1989)

3 Doub, J. Peyton, Reflections on the Benefits of NEPA. NAEP National E-news, January-February 2014, pp. 27-28

4 Doub, J. Peyton, What is NEPA: It is Environmental Democracy, News for the Environmental Professional, February 2016, pp. 8-9

5 40 CFR 1502.14

6 40 CFR 1508.20

7 40 CFR 230.91(c)

8 40 CFR 332

9 Council on Environmental Quality, Appropriate Use of Mitigation and Monitoring and Clarifying the Appropriate Use of Mitigated Findings of No Significant Impact, Memorandum for Heads of Federal Departments and Agencies, from Nancy H. Sutley, Chair, January 14, 2011

Maria Angelica Deeb, PE, MS, MEP, MPA (2016) City of Mesa Transportation Department. *Maria is a Civil Engineer registered in Bogotá, Colombia and in Arizona, USA. She is a transportation professional working currently for the City of Mesa, Arizona as their Transportation Project Coordinator. She has been in this position for over 11 years. Before she worked for the Arizona Department of Transportation (ADOT) in several capacities including as Project Manager and Environmental Team Leader.*

Factor That May Be a Game Changer and Must Be Addressed Now:

Self-driving Cars and Autonomous-driving Vehicles Deployment

Abstract

This paper summarizes the forecast made by others on when automated and self-driving cars are going to be available, and when will they be common on the roads. Based on current forecasts, it is concluded that accommodations to construction and operation of roads and cities will not have to be done at this time, however this is the time to develop strategies to enhance positive outcomes and mitigate negative impacts the automated and self-driving cars may pose. Now is the time to think of the implications, impacts, benefits and costs, and the potential strategic physical and policy options. Autonomous vehicles and self-driving cars are going to be part of the road users' transportation professionals are going to have to deal with. Now is the time to plan for accommodations that may need to be implemented to the road catering to users that will not have these autonomous vehicle vehicles but will conflict and interact with those that do. Research suggests that autonomous vehicles will probably increase total vehicle travel unless implemented with offsetting policies such as efficient road and parking pricing. Another critical issue is the degree of potential benefits that can be achieved when only a portion of vehicle travel is autonomous. A key public policy issue is the determination of the degree that this technology may harm people who do not use such vehicles. For now, transportation professionals must get involved in making sure that autonomous vehicles do not create negative impacts to roadway users using or not using self-driving technology. Public Policy makers must plan ahead on how to accommodate self-driving cars. Encouragement from transportation and city government professional is needed, and they must look at ways to create public policy measures that encourage benefits to the cities when self-driving cars are introduced to the market. Benefits can vary, but are not limited to reduction in the need for parking, encouragement of intermodal trips, and expansion of mobility by providing lower-cost travel options. Public policy can encourage the development of new mobility options that are obtained through self-driving cars.

Introduction

It is a fact that self-driving cars are going to alter how people get around cities. Such driving is going to change the ways cities work and this is going to affect Arizona cities. On August 12, 2016, the Arizona Department of Transportation held the first meeting of the Self-Driving Vehicle oversight committee which was opened to the public. To what degree the cities must change is a matter of continuous discussions. In June 2015, Yonah Freemark discussed this same issue in his article posted in the Transport Politic titled: Will autonomous cars change the role and value of public transportation? (Freemark 2015) He states that autonomous vehicles will affect transportation systems and cities as "they may alter the types of public transportation regions provided to citizens and they may increase or decrease the amount of driving people do." It is time, he concludes, to start the conversation of how to handle such driving as this is going to "impact the urban environment and will imply the need for public policy" to address questions of space, access and decisions to be made of how public transportation systems will work in the not so far future.

Background

There is also a question for city government on how these autonomous cars will be introduced. No one knows if these will simply replace today's Uber drivers, or will they be owned by private individuals. The International Transport Forum (ITF) has modeled scenarios showing increases in traveled miles with the rollout of self-driving vehicles and they entertain the idea that individuals that own self-driving cars may order their vehicles to drop them off in front of stores or other destination points, and have their car circle the block for hours while shopping. Other scenarios alternatively, have autonomous cars been publicly and/or cooperatively owned, thus providing a service to many and this could have significant benefits for cities by reducing the

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need for parking, encouraging intermodal trips, and expanding mobility by providing lower-cost travel options. In order to assess the impact of these, it must be understood what are the levels of autonomous vehicles currently been discussed. The table below was provided by NHTSA 2013:

Table 1: Levels of Autonomous Vehicles (NHTSA 2013)

Level 1 – Function-specific Automation: Automation of specific control functions, such as cruise control, lane guidance and automated parallel parking. Drivers are fully engaged and responsible for overall vehicle control (hands on the steering wheel and foot on the pedal at all times).

Level 2 – Combined Function Automation: Automation of multiple and integrated control functions, such as adaptive cruise control with lane centering. Drivers are responsible for monitoring the roadway and are expected to be available for control at all times, but under certain conditions can disengage from vehicle operation (hands off the steering wheel and foot off pedal simultaneously).

Level 3 – Limited Self-Driving Automation: Drivers can cede all safety-critical functions under certain conditions and rely on the vehicle to monitor for changes in those conditions that will require transition back to driver control. Drivers are note expected to constantly monitor the roadway.

Level 4 – Full Self-Driving Automation: Vehicles can perform all driving functions and monitor roadway conditions for an entire trip, and so may operate with occupants who cannot drive and without human occupants.

NHTSA (2013)

If the trend continues, the new mobility options created by cooperative autonomous vehicle driving will complement positively existing transportation systems. Yonah states that according to statistics from the American Public Transportation Association, ridership on buses and trains operated by major transit operators in the San Francisco area – BART, San Francisco Muni, Oakland's AC Transit and Caltrans, increased between 2013 and 2014, although in 2013 Uber was already providing approximately 160,000 trips per week in the Bay Area.

Forecasts and Trends

We can assume that the technology and safety features needed for autonomous vehicles will take at least the minimum time other vehicle safety measures took to be available and part of the car-markets within the US and world-wide. It is assumed that it may take 15 or up to 50 years for technology to be available for Level 4 to be a remote possibility and available to most car users and at a reasonable cost. Table 2 below lists the deployment cycles, typical premium costs and market saturation share of some know and available automobile safety technology. The summary is used as an indicator of the deployment cycle, costs and market share for autonomous driving technologies.

Table 2: Vehicle Features – Deployment Summary

Name	Deployment Cycle	Typical Cost Premium	Market Saturation Share
Air bags	25 years (1973 – 98)	A few hundred dollars	100%, due to federal mandate
Automatic transmissions	50 years (1940s – 90s)	$1,500	90% US, 50% worldwide
Navigation systems	30+ years (1985 – 2015)	$500 and rapidly declining	Uncertain; probably over 80%
Optional GPS systems	15 years	$250 annual	2 – 5%
Hybrid vehicles	25 + years (1990s – 2015+)	$5,000	Uncertain. Currently about 4%

New technologies usually require several decades between commercial availability and market saturation

Litman (2015)

Most vehicles are durable and median operating lives have average lifespans of 20 years or longer (ORNL 2012). Autonomous driving capability will most likely increase the price of vehicle purchases and may require that users subscribe to special navigation and mapping services. The table below summarizes autonomous vehicle implementation projections. Box 1 provides a prediction timeline of when and what will be available in terms of self-driving and autonomous vehicles.

Table 3: Autonomous Vehicle Implementation (Litman, 2015)

Stage	Decade	Vehicle Sales	Vehicle Fleet	Vehicle Travel
Available with large price premium	2020s	2 – 5%	1 – 2%	1 – 4%
Available with moderate price premium	2030s	20 – 40%	10 – 20%	10 – 30%
Available with minimal price premium	2040s	20 – 60%	20 – 40%	30 – 50%
Standard feature included on most new vehicles	2050s	80 – 100%	40 – 60%	50 – 80%
Saturation (everybody who wants it has it)	2060s	?	?	?
Required for all new and operating vehicles	???	100%	100%	100%

Autonomous vehicle implementation will probably take several decades.

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Box 1. A Timeline

Today: A helping hand
Features like adaptive cruise control, automatic braking and lane-keeping assist kick in when you don't respond quickly enough. Mercedes and Volvo produce cars that can drive themselves in stop-and-go traffic.

2016: Autopilot
New models from Tesla and Cadillac can cruise at highway speeds with no driver input. Some cars may even be able to valet-park themselves.

2020: Grandma's self-driving car
Low-speed, partially autonomous vehicles may be permitted in controlled settings like retirement communities. Also, possible: dedicated highway lanes for self-driving cars.

2025: Mostly Self-Driving
Highly automated driving will be allowed on more roads, but drivers will still need to be able to take over in certain situations. Public transportation could well be driverless.

2030: It's here!
People will be able to summon driverless cars anytime to take them anywhere. Long-haul cargo delivery will be autonomous.

Sources: Ernst & Young, Boston Consulting Group, Continental AG (http://www.forbes.com/sites/joannmuller/2015/10/15/the-road-to-self-driving-cars-a-timeline/#56bbfd737c1b)

Forecasts made in early 2016 by Volkswagen, GM, BMW, Ford (and these are available to the public at Driverless car market watch), predict that the first self-driving cars may be available in the market by 2019-2021 (Exhibit 1). Figure 1 was obtained from Victoria Transport Policy Institute's Autonomous Vehicle Implementation Predictions (Litman 2015) that concludes that in the 2040's autonomous vehicles will represent approximately 50% of vehicle sales, 30% of vehicles, and 40% of all vehicle travel. Only in the 2050s would most vehicles be capable of automated driving.

Benefits and Costs

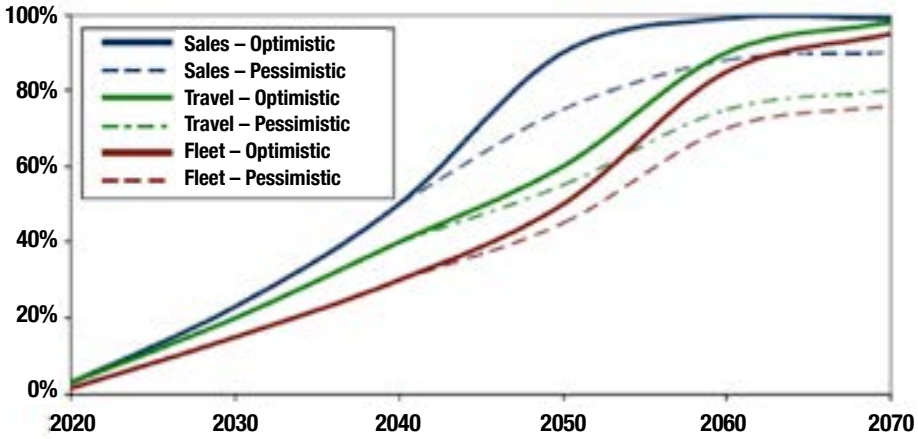
The Transportation Research Board has stated that computer piloted vehicles will reshape how states and localities build, manage and govern their roads. Daniel C. Vock in his article: "7 ways self-driving cars could impact states and localities" introduces the concept that the market will need to improve the technology that will be used, and its currently been used in automated vehicles. Although improving technology is one of the impacts that is now been felt, it is hardly a cause or effect of self-driving cars. However, it is true that these vehicles need cameras or GPS maps to effectively keep from conflicting with on-coming traffic and may be that the specific items that are been considered and are available in the cameras or GPS technology cater to such vehicle type. The vehicles also use technology such as ruble strips along the center line and road shoulders to demarcate their route. Vock quotes David Agnew, a researcher for an auto parts manufacturer, Continental Automotive Systems, who states that an accelerometer in a car can easily detect the vibration from the rumble strips and correct course.

Robin Chase wrote an article in CityLab where she concludes that automated cars will dramatically change the equation for public transit service because of the "much cheaper prices made possible when there's no human labor involved." For Chase, "buses, shuttles, minivans, school buses [will be] all gone" because these low-capacity transit modes will be replaced by automated cooperative cars which are not limited to their utility in fixed schedules and that may adapt to point-to-point demand. This is interesting as it raises a scenario that will require a significant public policy role through subsidies if cities are to maintain mobility for low-income people who do not have access to their own cooperative self-driving pool of cars. This service mirrors the existing Paratransit services of today; "paratransit trips costs the public purse more than three times as much to provide as regular bus and rail services according to the U.S. Government Accountability Office, but that's in part because of the low capacity of paratransit vehicles, high labor costs, and their non-fixed route services" (Chase 2014).

Paratransit has been implemented as a result of the federal government mandate, which extends from the American with Disabilities Act. So, how will cities change their transportation infrastructure (less parking, better demarcation in their streets with changes stripping, markings and signs), their public policies (such as the provision of paratransit services) and how will cities invest in public transportation? It is the time to search for the answers to these questions.

Another impact that is currently been discussed within cities and localities is that of standardization. When

Figure 1: Autonomous Vehicle Sales, Fleet and Travel Projections (Litman, 2015)



If autonomous vehicle implementation follows the patterns of other vehicle technologies it will take one to three decades to dominate vehicle sales, plus one or two more decades to dominate vehicle travel, and even at market saturation it is possible that a significant portion of vehicles and vehicle travel will continue to be self-driven, indicated by the dashed lines.

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self-driving vehicles become more common, signs, signals and roadways will most likely need to include standards so that self-driving vehicles can navigate safely and not be constrained to a corridor, city or region. According to Agnew, "the differences in signs used by different states in the United States is greater than the variety of those used by different countries in Europe." Self-driving vehicle manufactures have to rustle with developing a car that operates well, effectively and in most places even though there is no universal standard. To what degree should non-standardization be accommodated? Will this affect the cost and reliability of the vehicle? These are just two questions that still need to be answered by government and the self-driving developers and its market.

Vock further states that private businesses and technology developers fear that regulations imposed by public officials will limit, increase the cost, or stop to a crawl, improvements made by them. But when it comes to driverless cars, California's Transportation Director Malcolm Dougherty found the opposite to be true. Dougherty stated that the state issued regulations for autonomous vehicles and these regulations allowed researchers to operate lawfully and safely on state roads while experimenting with new technology.

Another impact that is currently in the mind of all public officials and city budget managers is the cost of the transportation infrastructure if its life cycle is shortened. Transportation departments build roads and transportation infrastructure that lasts for 15 to 50 years. Technology such as smartphones and computers advances so fast that it's generally considered obsolete after two years. In some cases, cell phone providers entice their customers to change their cell phone every 12 to 24 months; and the customer does not always own the technology they pay to access and use. John Barton, Deputy Executive Director of the Texas Department of Transportation, is aware of this fact, and chooses to pay a in a yearly basis access to the web for technologies and software's such as Microsoft Office that allows vehicles and infrastructure to communicate to each other. According to Barton, "In fact, a private provider may also be willing to collect, process and analyze huge amounts of information gathered by those systems for the state for free, if they are able to also use it for their own commercial purposes."

Yet, another impact worth discussing is that of cybersecurity and privacy definition/expectation. Although public officials in general state to the public that transportation systems and the government's that oversee them do not track personal information and do not share personal location information outside of the government system, people are wary of vehicle systems that keep track of their movements. But the fear extends to how autonomous systems implementation may be hacked and may be used for criminal or terrorist activity.

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Planning

In 2016, new vehicles have some Level 1 automation features such as cruise control, obstruction warning, and parallel parking. In 2017-2021, car manufacturers plan to offer Level 2 features such as automated lane guidance, accident avoidance, and driver fatigue detection. Google Level 3 test vehicles have reportedly driven hundreds of thousands of miles under restricted conditions: specially mapped routes, fair weather, and human drivers able to intervene when needed (Muller 2013).

Some manufacturers forecast having Level 4 automation vehicles sometime in the early 2020s but this is uncertain. Many forecast that when Level 4 is achieved the early versions of autonomous vehicles will probably be limited to "controlled" environments such as freeways (Row 2013). Failure could be deadly to vehicle occupants and other road users; therefore, automated driving has high performance requirements. Sensors, computers and software must be robust, redundant and resistant to abuse. Several more years of development and testing will be required before regulators and potential users gain confidence that Level 4 vehicles can operate as expected under all conditions (Bilger 2013; Schoettle and Sivak 2015).

Even if we assume that fully-autonomous vehicles will be available for sale and legal to drive on public roads around 2020, one may predict, that early versions are initially imperfect, with questionable reliability and performance, and are costly; therefore "they represent a small portion of total vehicle sales, with market share increasing during subsequent decades as their performance improves, prices decline, and their benefits are demonstrated (Litman 2015)."

Table 4 (at right) summarizes the potential impacts (benefits and costs) of autonomous vehicles, noting that these may provide various possible outcomes and it is time for government, city, and transportation planners to take note.

Table 4: Benefit and Costs of Autonomous Vehicles (Litman, 2015)

Benefits	Costs/Problems
Reduced Driver stress. Reduce the stress of driving and allow motorists to rest and work while traveling.	**Increases costs.** Requires additional vehicle equipment, services and maintenance, and possibly roadway infrastructure.
Reduced driver costs. Reduce costs of paid drivers for taxis and commercial transport.	**Additional risks.** May introduce new risks, such as system failures, be less safe under certain conditions, and encourage road users to take additional risks (offsetting behavior).
Mobility for non-drivers. Provide independent mobility for non-drivers, and therefore reduce the need for motorists to chauffeur non-drivers, and to subsidize public transit.	**Security and Privacy concerns.** May be used for criminal and terrorist activities (such as bomb delivery), vulnerable to information abuse (hacking), and features such as GPS tracking and data sharing may raise privacy concerns.
Increased safety. May reduce many common accident risks and therefore crash costs and insurance premiums. May reduce high-risk driving, such as when impaired.	**Increased vehicle travel and increased external costs.** By increasing travel convenience and affordability, autonomous vehicles may induce additioal vehicle travel, increasing external costs of parking, crashes and pollution.
Increased road capacity, reduced costs. May allow platooning (vehicle groups traveling close together), narrower lanes, and reduced intesection stops, reducing congestion and roadway dosts.	**Social equity concerns.** May have unfair impacts, for example by reducing other modes' convenience and safety.
More efficient parking, reduced costs. Can drop off passengers and find a parking space, increasing motorist convenience and reducing total parking costs.	**Reduced employment and business activity.** Jobs for drivers should decline, and there may be less demand for vehicle repairs due to reduced crash rates.
Increase fuel efficiency and reduce pollution. May increase fuel efficiency and reduce pollution emissions.	**Misplaced planning emphasis.** Focusing on autonomous solutions may discourage communities from implmenting conventional but cost-effective transport projects such as pedestrian and transit improvements, pricing reforms and other demand management strategies.
Supports shared vehicles. Could facitilitate carsharing (vehicle rental services that substitute for personal vehicle ownership), which can provide various savings.	

Autonomous vehicles can provide various benefits and impose various costs.

Autonomous vehicle implementation is just one of the factors that may affect future transport demands and costs. Factors like: demographic trends, changing consumer preferences, price changes, improved transport options, improved user information, and other innovations may influence the way and how much people drive. The combination of all the factors listed above may have greater planning impacts than the impacts resulting from autonomous vehicles, at least until the 2040s.

Functional Requirements and Planning Implications

The projections suggest that during the 2020s and 30s transport planners and engineers will primarily be concerned with defining autonomous vehicle performance, testing and reporting requirements for operation on public roadways. During the 2030s or 40s it may be observed that autonomous vehicles will be utilized as taxi and car-sharing services, therefore reducing the need for conventional public transit services and providing more households to use these services and reduce their vehicle ownership, which could reduce parking requirements. However, modeling by the International Transport Forum indicates that self-driving taxis and public transit services are complements rather than substitutes, since transit is more efficient at serving many peak-period urban trips and so significantly reduces the self-driving taxi fleet size and costs.

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When autonomous vehicles become a major share of total vehicle travel, this type of vehicles may significantly reduce traffic risk, traffic congestion, parking problems, and provide some energy savings and emission reductions. However, in order to experience these benefits, autonomous vehicles must be the major share or vehicles in public roadways. Planners have expressed safety concerns for those vehicle users who do not have autonomous features within their vehicles, or other road users such as pedestrians and bicyclists. Planners must think, now, of these non-autonomous vehicle users.

Conclusion

Autonomous vehicles and self-driving cars are going to be part of the road users, we as transportation professionals are going to have to accommodate. Now is the time to plan for the road users who do not have autonomous vehicles but will conflict and interact with those who do. A critical question is whether autonomous vehicles will increase or reduce total vehicle travel and associated external costs. The truth is that we do not know, and the answer may depend on the market, region, and technology availability.

Research suggests that they will probably increase total vehicle travel unless implemented with offsetting policies such as efficient road and parking pricing. Another critical issue is the degree potential benefits can be achieved when only a portion of vehicle travel is autonomous. A key public policy issue is the degree that this technology may harm people who do not use such vehicles. Will the market make cities evolve to situations where there are increased traffic volumes and speeds and a degraded walking and cycling conditions, conventional public transit service declines, or human-driven vehicles are restricted?

For now, transportation professionals must get involved in making sure that autonomous vehicles do not create negative impacts to roadway users utilizing or not self-driving technology. But, we also have to plan ahead on how to accommodate self-driving cars. I conclude that policy debates concerning whether public policies should encourage or require autonomous vehicles will happen soon.

I encourage transportation and city government professionals to look at ways to create public policy measures that encourage benefits to the cities when self-driving cars are introduced to the market. Benefits can vary, but are not limited to reduction in the need for parking, encouragement of intermodal trips, and expansion of mobility by providing lower-cost travel options. Public policy can encourage the development of new mobility options that are obtained through self-driving cars. Some of the research states that self-driving cars are to change the equation for public transit significantly, but this will only happen if public policy administrators take the role, now, to study effective and efficient ways of developing subsidy programs that increase the potential benefit.

It is the time, now, for cities to determine strategies for funding methods to gather data that will allow them to monitor self-driving technologies and their effect in their US, region and city/town. The analysis of the data will allow cities to determine the need to change their transportation infrastructure (less parking, better demarcation in their streets with changes stripping, markings and signs), the need for creating public policies (such as the provision of paratransit services) and establish investment programs in public transportation. Autonomous vehicle implementation is just one of the factors that may affect future transport demands and costs, but it is certainly a key factor that needs to be addressed now.

These benefits and impacts of autonomous and self-driving cars may vary geographically, with more rapid implementation in areas that are more affluent and more congested that Arizona cities. Autonomous vehicle implementation is just one of many trends likely to affect future transport demands and costs. Its ultimate impacts depend on how it interacts with other trends, such as views regarding vehicle ownership and car-pool/sharing vehicles. Autonomous vehicles will not re-define how transport problems are viewed; rather, it reinforces existing automobile-oriented transport planning.

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Exhibit 1 – Forecasts

Autonomous car forecasts

This page lists the most recent predictions about when driverless cars will be available on the market:

Volkswagen expects first self driving cars on the market by 2019

Johann Jungwirth, Volkswagen's appointed head of Digitalization Strategy, expects the first self-driving cars to appear on the market by 2019. He did not claim that these would be Vokswagen models.
(Source: Focus, 2016-04-23)

GM: Autonomous cars could be deployed by 2020 or sooner

General Motors's head of foresight and trends Richard Holman said at a conference in Detroit that most industry paritcipants now think that self-driving cars will be on the road by 2020 or sooner.
(Source: Wall Street Journal, 2016-05-10)

BMW to launch autonomous iNext in 2021

At their annual shareholder meeting, BMW CEO Harald Krueger said that BMW will launch a self-driving electric vehicle, the BMW iNext, in 2021 (Source: Elektrek, 2016-05-12)

Ford's head of product development: autonomous vewhicle on the market by 2020

Raj Nair, Ford's head of product development, expects that autonomous vehicles of SAE level 4 (which means that the car needs no driver but may not be capable of driving everywhere) will hit the market by 2020.
(Source: autonews, 2016-02-27)

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NAEP 2017 CONFERENCE KEYNOTE SPEAKER INFORMATION

The 2017 NAEP Annual Conference will be held in the Durham Convention Center in Durham, North Carolina, March 27 - 30, 2017!

The 2017 conference registration site is now open! NAEP is pleased to announce that registration rates have not been increased this year. Please note that there are added savings if you are a speaker or a government employee.

Highlights of the 2017 conference will be the Networking Welcome Reception on Monday night, the President's Event on Tuesday, and the Dine Around Durham Wednesday evening.

The conference will be held at the Durham Convention Center which is conveniently linked to the Durham Marriott City Center Hotel, the headquarters hotel for the conference. We look forward to seeing you in Durham!

- For the main 2017 Conference webpage please visit http://www.naep.org/2017-conference
- For Sponsorship and Exhibit information please visit http://www.naep.org/2017-conference-sponsor-and-exhibitor-information
- For the Schedule at a Glance please visit http://www.naep.org/schedule-at-a-glance
- For information on Durham, North Carolina please visit http://www.naep.org/durham-information
- For Hotel and Travel information please visit http://www.naep.org/hotel-and-travel-information

Click HERE to Register Online Today!

Download a PDF Registration Form HERE.

NAEP 2017 CONFERENCE TUESDAY KEYNOTE SPEAKERS

Join us on Tuesday, March 28 for the NAEP Welcome and Planning Session. Co-presenters will be Tim Profeta and Tom Earnhardt, two of North Carolina's most recognizable environmental experts.

Tim Profeta

Tim Profeta is the director of Duke University's Nicholas Institute for Environmental Policy Solutions. Since 2005, the Nicholas Institute has grown into a major nonpartisan player in key environmental debates, serving both the public and private sectors with sound understanding of complex environmental issues.

Profeta's areas of expertise include climate change and energy policy, the Clean Air Act, and adaptive use of current environmental laws to address evolving environmental challenges. His work at the Nicholas Institute has included numerous legislative and executive branch proposals to mitigate climate change, including providing Congressional testimony several times on his work at Duke University, developing multiple legislative proposals for cost containment and economic efficiency in greenhouse gas mitigation programs, and facilitating climate and energy policy design processes for several U.S. states.

Prior to his arrival at Duke, Profeta served as counsel for the environment to Sen. Joseph Lieberman. As Lieberman's counsel, he was a principal architect of the Lieberman-McCain Climate Stewardship Act of 2003. He also represented Lieberman in legislative negotiations pertaining to environmental and energy issues, as well as coordinating the senator's energy and environmental portfolio during his runs for national office. Profeta has continued to build on his Washington experience to engage in the most pertinent debates surrounding climate change and energy.

Profeta earned a JD, *magna cum laude,* and MEM in resource ecology from Duke in 1997 and a BA in political science from Yale University in 1992.

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Tom Earnhardt

Conservationist/Attorney/ Producer/Writer

Tom Earnhardt is a graduate of Davidson College and UNC School of Law. Working with Attorney General Robert Morgan, Tom was one of the first attorneys to work for North Carolina in the "new" area of Environmental Law in 1971. In Governor James Holshouser's administration he worked with Secretary William Bondurant to protect the New River and to purchase much of the land that is now part of Cape Lookout National Seashore. Earnhardt also worked in the corporate arena (in-house Counsel for Fieldcrest Mills, Inc.), and in private practice with the Goldsboro law firm of Taylor, Allen, Warren and Kerr. Finally, Tom had over 20 years in the classroom, and retired as a full professor. At North Carolina Central University School of Law he taught Property, Business Associations, and Environmental Law.

In Earnhardt's "other life" he has been, and continues to be, an avid naturalist and advocate for the natural and cultural resources of North Carolina. Tom is a keen observer and photographer of wild things and places. His conservation-related travel and speaking engagements have taken him across North America, the British Isles, Europe, and Asia—including Russia and China. In North Carolina, Tom has been a keynote speaker at many environmental, regulatory, civic, state park, and science organizations over the years. Over the past 14 years Tom has crisscrossed North Carolina researching, writing and co-producing over 80 episodes of the natural science television series, Exploring North Carolina (SEE BELOW). Earnhardt also completed a natural history of North Carolina for the University of North Carolina Press (released in April, 2013) titled, Crossroads of the Natural World.

Tom has served on the boards of major preservation and conservation organizations including: The Nature Conservancy (state), Trout Unlimited (national), North Carolina Wildlife Federation (state), Audubon North Carolina, the Friends of North Carolina Museum of Natural Sciences (President, 2009-2011), and the North Carolina Botanical Garden Foundation (President, 2014-2016). He was recently appointed to the Executive Committee of the North Carolina Literary and Historical Society. Earnhardt has received numerous awards for his work with cultural and natural resources, including the Governor's Award as "North Carolina Conservationist of the Year" in 1994. In 2004 he received Audubon's prestigious "Honorary Warden Award" for protection and preservation of bird habitats and sanctuaries. For Earnhardt's work with the North Carolina Museum of Natural Sciences and for championing natural resources, he received the "Order of the Longleaf Pine" in 2011.

The UNC-TV (Public Television) television series, Exploring North Carolina (ENC), which highlights natural resources of North Carolina and the Southeast, has been nominated for Emmy Awards five times. It has consistently been one of the highest-rated programs on UNC TV as it celebrates North Carolina's rich cultural and natural history from the Outer Banks to the Tennessee border. In 2010, 24 episodes of ENC were made available to North Carolina public schools, with a special grant from the William R. Kenan Jr. Charitable Trust. In 2015, 53 episodes (of the more than 80 produced thus far) were included in the "North Carolina Collection" at Wilson Library at UNC-CH, and will soon be available online. This year Tom Earnhardt and his production company, Explore North Carolina, LLC, produced a one-hour tribute to North Carolina State Park System that aired multiple times state-wide over UNC TV.

2017 CONFERENCE SPONSOR AND EXHIBITOR INFORMATION

Dear Sponsors and Exhibitors:

The National Association of Environmental Professionals (NAEP) and its North Carolina chapter (NCAEP) cordially invite you to participate and exhibit at the 42nd Annual Conference which will be held March 27-30, 2017 in Durham, North Carolina. The conference will take place at the Durham Convention Center, and a block of conference-rated sleeping rooms has been reserved at the Durham Marriott City Center. Building on the success of prior conferences, we anticipate approximately 400 attendees and are sure you will enjoy networking opportunities to demonstrate and discuss your company's products and services.

The exhibit hall will open formally on Monday evening, March 27 with the Opening Networking Reception to which all conference participants are invited. Exhibit booth and table top set-up is scheduled for Monday afternoon. Exhibits close Thursday afternoon, March 30.

Please note the following exciting changes which we have implemented for 2017:

- Exhibitors will be provided with an eight-by-ten pipe-and-draped booth, a table, two chairs, a wastebasket, and a company ID sign. A general services contractor (decorator) will be available to assist you with any freight or additional furniture needs which you might have.
- The exhibit hall is located on the main hallway of the convention center, next to the general sessions and a few steps away from the various concurrent breakout rooms.
- Every effort has been made this year to offer sponsors and exhibitors full access to every attendee who enters the exhibit hall. **When you look at the floor plan, note that every booth has two (2) open sides from which to engage attendees.** Both horizontal and vertical aisles have deliberately been made wider so that all food and beverage will be interspersed among the exhibits. There will also be several high cocktail tables scattered throughout. The exact placement of these will be determined closer to the conference.
- All morning and afternoon breaks and the two continental breakfasts will be placed in the exhibit hall. Preliminary planning calls for a dedicated poster session in the hall which not only will add another exhibit hall event but also will provide several participants the chance to showcase their work by speaking peer-to-peer with other conference attendees.
- The Opening Networking Reception will offer several food stations and space for attendees to mix and mingle. Naturally you are invited to participate in all social events held in the exhibit hall.
- There is complimentary Wi-Fi offered throughout the Durham Convention Center. Diamond, Platinum, Quantum, and Gold sponsors and exhibitors will receive at least one (1) complimentary full conference registration. (Please see the accompanying paperwork for the tiers of sponsorship.) Table-top exhibitors will receive a one-day registration to attend the conference on the day of your choice. Additional registrations, of course, can be purchased at the regular conference rates.

With several levels of sponsorship, there are a variety of choices to ensure that you and your organization receive the opportunities you desire. All sponsors and exhibitors will receive recognition in the final program, the exhibit/meeting area, and on screen before general sessions and luncheons.

In addition, sponsorship levels from Diamond through Gold receive an exhibit booth automatically as part of the sponsorship.

DIAMOND SPONSOR (ONE AVAILABLE) - $20,000

PLATINUM SPONSOR - $10,000

QUANTUM SPONSOR - $7,500

GOLD SPONSOR - $5,000

SILVER SPONSOR - $2,500

COPPER SPONSOR$1,500

BRONZE SPONSOR - $750

EXHIBIT BOOTH - $1,750

TABLETOP SPACE - $1,200

We look forward to welcoming you to the 42nd Annual Conference in Durham.

John Jamison
2017 Conference Co-Chair

For more information on Sponsor and Exhibit Opportunities please CLICK HERE

NAEP

National Association of Environmental Professionals

Promoting Excellence in the Environmental Profession

NAEP is looking for Young Professionals to Serve on our Committees and Strategic Pillars!

NAEP is looking for Young Professionals who have aspirations to take their NAEP membership and career to the next level. NAEP is comprised of a wide variety of professionals from coast to coast, from consulting firms to non-profits to agencies, and from right out of college to experienced professionals and leaders. We strive to provide the best value to all of our members. We need your energy, your viewpoints, and your skills to help NAEP provide the most valued experience to our younger members. If you have had interest in getting involved at a national level and interacting with some of the leaders in this organization and industry, we want to hear from you. Please respond by January 31, 2017 with a statement of interest including why you are interested and what you would do to be an effective liaise with our young members. There are opportunities to work with many different Committees including Education, Leadership Development, Membership, Publications and Website. In this role you can expect to gain a heightened outlook of what is going on in our industry, name recognition within your profession, and certainly a broader network with leaders and peers across the country.

Information can be sent to Tim Bower at naep@naep.org. Any questions please feel free to call the NAEP headquarters at 856-283-7816.

Thank you and Happy New Year!

Leslie Tice, CEP, NAEP Elected Board Member and Membership Committee Chair
leslie.tice@erm.com

Reflection: Why Should I Join NAEP and Volunteer on a Committee or Become a Board Member?

By Roger Turner, Past NAEP Liaison California Chapter AEP

October 2016

I am reflecting on my own career history many years ago why I joined the California Association of Environmental Professionals (AEP) and then became a member of the National Association of Environmental Professionals (NAEP). My journey began in May 1980. I think the first thing I did was attend a professional lunch meeting with a speaker presenting an interesting topic on a piece of environmental legislation affecting land use policy, stuff I was working on at the time. I actually met some great people of like mind discussing the issues I was working on. I knew I could get a broader perspective on approaches and subject matter that immediately helped me do my work better. An immediate benefit! But more, I met environmental professionals with whom we have developed long time friendships over the years that has been one of the best and lasting values received from a simple introduction to someone with like interests.

Why should you become a volunteer on an NAEP Committee?

I'll discuss a few good reasons here and more in a later article to be published in another upcoming NAEP Newsletter.

I think one of the most important values of belonging to this organization is the networking opportunities. Meeting, mingling with and getting to know others in your field provides a priceless opportunity to get your face and your resume in front of prospective employers, employees and resource suppliers in a relaxed atmosphere. Attending local and national meetings and conferences reveals your commitment to excellence in your profession and introduces you to the other players. These events also help you keep current on trends, developments, new products, vendors and potential opportunities to enhance your career and mentor others. And the friendships you will develop from this experience are priceless.

Of great value is Professional Development. The environmental Practice Profession requires ongoing education to maintain your cutting edge skills in your practice. Attending training sessions leading to certification and mastery in specific skill areas helps members increase proficiency and income. NAEP offers annual conferences with great courses and sessions. Webinars on specific subject matter help keep you on the cutting edge with the latest environmental policy on specific subject matter. Chapter programs feature great topics to keep you current. You can even volunteer to work on the Education Committee producing these valuable member sessions or one of the many other committee's that all help make NAEP the excellent organization it is today! If you like writing, present an interesting article for the national or local journals and newsletters published by NAEP or your local Chapter. This will provide you opportunities to polish your written communication skills and expound on or learn about advances in your field. Access to industry information and research resources is another reason people join NAEP.

Become active, involved and commit to make a difference in your profession, community and yourself.

Till next time may you have a most interesting journey.

NAEP Announces Two New Topics for the Community Forum

NAEP is pleased to announce two new Community Forums have been added to the existing NEPA Policy and Practice Forum. These forums are a great way to ask questions and share resources with your fellow NAEP members. For more information on the Forums or help using them please call Tim Bower at 856-283-7816. The three current Forums are listed below:

Climate Change and Adaptation Forum

Climate change and adaptation are considered by many to be the most urgent environmental issue on the planet. Our understanding of climate change, our ability to predict its effects, and accepted practice for evaluation and planning are all areas in constant flux. This forum provides a virtual meeting space for environmental practitioners to share information, ask questions, or engage in a dialogue on this subject.

NEPA Policy and Practice Forum

The National Environmental Policy Act (NEPA) of 1969 requires all federal agencies to consider relevant environmental effects before making a decision or taking an action. This consideration largely takes the form of an EIS, EA, or CE, following procedures established by the Council on Environmental Quality (CEQ) and individual federal agencies. This forum provides a venue for anyone involved with or interested in the NEPA process to post information, ask questions, or engage in a dialogue with other NEPA practitioners. Note that subjects specific to climate change or transportation may be cross listed with those forums.

Transportation Forum

Transportation facilities and operations are one of the most common subjects of environmental analysis, planning, and policy. The potential effects of transportation include span a wide variety of subjects and technical disciplines. The planning and evaluation of transportation projects is guided by variety of federal and state regulation and guidance. This forum provides a venue for environmental professionals involved with transportation to share information, ask questions, or engage in dialogue. Note that some subjects may be cross listed with the NEPA forum.

NAEP

National Association of Environmental Professionals

Promoting Excellence in the Environmental Profession

Annual National Environmental Policy Act (NEPA) Report for 2015 Available Online to NAEP Members

The National Association of Environmental Professionals (NAEP), a non-profit professional society dedicated to excellence in the environmental professions, has released their Annual National Environmental Policy Act (NEPA) Report 2015. The NEPA Annual Report—which is prepared by volunteer professional members of the NAEP NEPA Practice Group—is a unique compilation of data on the current state of NEPA compliance. NAEP provides the Annual Report at no cost to agency NEPA Liaisons and to NAEP members.

In 2015, announcements of 381 Draft, Final, and Supplemental Environmental Impact Statements (EISs) were published in the Federal Register. This total is similar to the 384 EISs announced in 2014. U.S. Forest Service (USFS) published the most documents with 71 (19% of total), followed by the Bureau of Land Management (40/10%), U.S. Army Corps of Engineers (40/10%), Federal Highway Administration (23/6%) and National Park Service (17/4%). (Based on information in the U.S. Environmental Protection Agency (EPA) database of EISs; http://www.epa.gov/Compliance/nepa/eisdata.html).

The NEPA Annual Report also found that 194 Final EISs were made available in 2015. The average time to prepare those EISs (measured from Notice of Intent to Final EIS) was 5.0 years. Sixteen percent of EISs were prepared in two years or less.

In 2015, the U.S. Courts of Appeal issued 14 substantive decisions involving implementation of NEPA. The 14 cases involved 11 different departments and agencies, with the agencies prevailing in 79 percent of the cases.

This year's Guest Editorial is from Horst Greczmiel. Mr. Greczmiel recently retired after serving 17 years as Associate Director for NEPA Oversight at the Council of Environmental Quality. Mr. Greczmiel reiterates the role of NEPA in sound decision making and the need to protect and strengthen its most valuable aspects. These aspects include public involvement and careful consideration of reasonable alternatives.

The 2015 NEPA Annual Report also includes:

- "Just the Stats" on the EPA review and comments on EISs;
- Preparation Times for Environmental Impact Statements Made Available in 2015;
- Recent NEPA Cases from the U.S. Courts of Appeal;
- Recent Congressional Legislation Regarding NEPA.

The 2015 NEPA Annual Report is available at no cost to NAEP members. If you are a member and need assistance logging onto the website please call or email Tim Bower at 856-283-7816 or naep@naep.org.

To join NAEP please visit www.naep.org or call 856-283-7816.

2016 APU & NAEP Webinar Series

Join us for our fifth exciting year of interactive webcasts with our environmental industry experts brought to you by American Public University and the National Association of Environmental Professionals (NAEP).

National Association of Environmental Professionals (NAEP) and American Public University (APU) have shared efforts through an educational alliance with the goal to help prepare environmental professionals to advance in their field through career-relevant education. With this goal in mind, NAEP and American Public University leaders are collaborating on a fourth year of webcast series focused on career preparation and professional development for environmental professionals.

2016 WEBINAR SERIES SCHEDULE

Wednesday, March 30, 2016 • 2:00 - 3:15 PM [ET]
Part 1: Interdisciplinary Team Management

With more projects requiring experts from different disciplines to develop workable solutions, the interdisciplinary team (IDT) is recognized as one of the essential problem-solving tools used by environmental professionals. This webinar focuses on how the leaders and members of an IDT working on small, medium, and large-scale environmental projects create a collaborative, harmonious team. We will further discuss tips in communication and planning to maintain productive working relationships among team members and simplify the management team's efforts throughout the project's duration.

Our panel of industry experts give you best practices and tips on how to effectively address the complex problems of projects requiring experts with different areas of expertise including:

- Identifying the qualities of a good IDT leader
- Clarifying project goals and roles
- Keeping the process moving forward
- Creating effective interdisciplinary communication
- Document management
- Collaborating on cross-resource issues
- Maintaining effective interdisciplinary team interactions
- Maintaining momentum and meeting deadlines
- Dealing with changes in the team

Speakers:

- Ron Deverman, Associate Vice-President and Principal Environmental Planner, HNTB and NAEP Board Member
- Kris Thoemke, Ph.D., CEP, APU Faculty Member, Senior Scientist at Coastal Engineering Consultants, Inc. and NAEP Board Member
- Leslie Tice, CEP, Program Director at Environmental Resources Management and NAEP Board Member

For speaker bios, more information or to view the recorded webinar please visit
https://naep2016-1.splashthat.com/

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Webinar Series *Continued from page xx*

Wednesday, July 13, 2016 • 2:00 - 3:15 PM [ET]
Part 2: Effective Community Engagement

The second part in the 2016 APU & NAEP Webinars Series will focus on Effective Community Engagement. Speakers will address all aspects of community engagement starting in the classroom, moving through application in the business world, and offering insights from first hand experiences through case study. From the student focus relating community engagement to career success to those already working in the environmental field, speakers will discuss how public engagement is part of policy and regulation and must be part of best professional practices. Speakers will reflect on lessons learned from the public when they have an interest or are impacted by environmental projects. There will also be a section on tips and techniques for in person meetings and online venues to include some of the more practical day-to-day components of community engagement.

Our panel of experts will guide you through tips and examples of best practices for effective community engagement including:

- What is community engagement and why is it important
- Relevance of community engagement to careers in the environmental sciences
- Theory and application of community engagement
- Public engagement is part of policy and regulation
- How the NEPA process relates to engagement
- Tools available for effective engagement
- Steps in engagement include informing, consulting, and involving the community
- How to learn from the community with an interest in the project
- Expected community reactions if engagement goes wrong
- Techniques for meetings and online venues
- Case study on public engagement in resource protection
- Engaging diverse audiences from local through federal government, NGOs, land owners, and the public

Speakers:

- **Bruce Bodson,** Professor
- **Christine Chin Choy,** Instructor, Science, Technology, Engineering and Math
- **David Mattern, CEP,** Senior Manager at Parametrix and NAEP Board Member

For speaker bios, more information or to view the recorded webinar please visit
https://naep2016-2.splashthat.com

Wednesday, November 16, 2016 • 2:00 - 3:15 PM [ET]
Part 3: Tips on Improving Technical Writing

Technical writing is a skill that develops over time and must be practiced. One primary consideration from the onset is the audience. Will the writing appear in a scholarly, discipline-specific journal? Are you crafting a compliance document or are you writing a project report for your funding agency? Understanding your audience focuses your writing in both style and content. The organization and written sections of your project will vary, based on the intended audience. This webinar addresses several types of professional writing, identifies important considerations, and offers writing tips to consider.

Speakers:

- **Kris Thoemke, Ph.D., CEP,** APU Faculty Member, Senior Scientist at Coastal Engineering Consultants, Inc. and NAEP Board Member
- **Marie Campbell,** President of Sapphos Environmental and NAEP Vice-President
- **Kelly Chinners Reiss, Ph.D.,** Program Director for Environmental Science at American Public University System

For speaker bios, more information or to view the recorded webinar please visit
https://naep2016-3.splashthat.com

Highlights of the NAEP-APU Partnership

As a National Association of Environmental Professionals member, you're inspired to translate your passion for safeguarding environmental resources through leadership, research, or policy management and American Public University stands ready to help you. Since partnering with NAEP in 2011, APU has been providing members with quality environmental education from the only four-time recipient of the prestigious Online Learning Consortium's Effective Practice Award (2009, 2010, 2013 & 2014). If you haven't experienced APU's flexible and career-focused approach to quality, online education, here are some reasons you should.

1. Recent 5% tuition grant for all NAEP members

APU is pleased to announce a new tuition grant that will be available to all NAEP members, which in addition to the university's mission to keep tuition and material costs low, will help environmental professionals complete their studies affordably. You can choose from a variety of undergraduate or graduate certificates and degrees in disciplines ranging from environmental policy and management, to sustainability, fish and wildlife, technology, public lands management, and many more. Enrollment is underway.

2. Enhanced 2015 webcast series

In the fourth year of our successful collaboration, NAEP and APU are bringing hard-hitting industry topics to student listeners around the world hosted by industry experts you'll want hear. The 2015 three-part series includes topics with an emphasis on professional development trend for the emerging or established environmental professional. The series is free and at your fingertips, so you can pick up additional career skills when it's flexible to your schedule. Visit the NAEP/APU partner portal at StudyatAPU.com/NAEP today to access webinars on conflict resolution, leadership, management, and more for environmental professionals.

3. College credits awarded for members who earned their Certified Environmental Professional (CEP) Credential

APU awards six semester hours of credit toward a M.S. in Environmental Policy and Management for any of the five CEP certification areas. If you're not pursuing this degree, you may utilize the six semester hours as elective credits toward another graduate degree program if there are available electives. Environmental professionals certified by ABCEP must undertake 40 hours of continuing professional development credit each year to maintain their certification. APU credit hours may be applied to a CEP's continuing professional development credits for the annual CEP Maintenance Program.

4. Exclusive NAEP member library

Whether Whether you're a night owl or early riser, you can access APU's award-winning online library 24/7 to conduct deep-dive research into your projects just as easy as you can access trending topics. With the exclusive NAEP/APU Library Portal, you'll tap into industry-specific open websites, resources, and outstanding librarian services. APU librarians are quick to help you find the data you need to increase the depth and impact of your project. For additional help, check out the new NAEP Resource Guide. ■

Need the password? Contact Tim Bower.

If you've been thinking about studying at APU— your timing is perfect. In addition to these NAEP-member benefits, we've enhanced our alumni services, and launched our highly-anticipated mobile app so you can learn using your favorite mobile phone or tablet. For more information visit StudyatAPU.com/NAEP.

Nominate an Emerging Environmental Professional

Know an Environmental Professional who has made a valuable contribution to the profession?

Someone who should be recognized for their leadership, professional involvement and commitment to the environmental profession?

Nominate them today for this prestigious award!

Email **office@abcep.org**
or visit
www.abcep.org/blogs/awards

Candidates must:

- **Not be older than 35 years old.**
- **Possess a bachelor's degree from an accredited university in an applicable field.**
- **Be a full-time environmental professional.**
- **Have a minimum of 5-years professional experience in a position of responsible charge.**

Environmental Practice: Call for Papers

PAPERS FOR JUNE ISSUE DUE 1/23/17

Environmental Practice is an English-language journal published quarterly by the National Association of Environmental Professionals. It serves an international audience of environmental professionals in practice and research. *Environmental Practice* is peer-reviewed and accepts original manuscripts that have not previously been published in whole or in part in a peer-reviewed journal or in a widely available publication, either print or electronic.

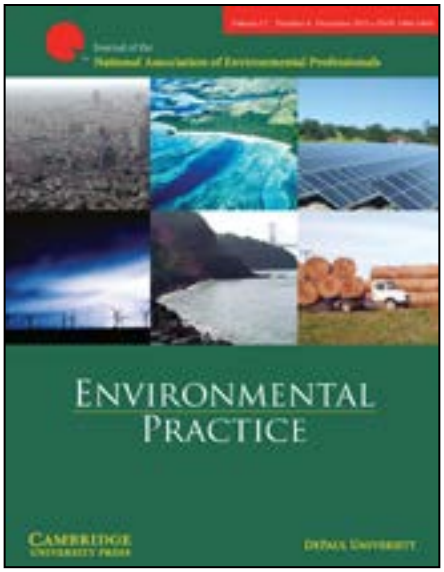
Priority for publication is given to manuscripts that offer clear, insightful views on an environmental problem from an interdisciplinary perspective. *Environmental Practice* seeks especially to publish studies that link data and findings in science and technology with issues of public policy, health, environmental quality, law, political economy, management.

Manuscripts are accepted throughout the year.

Kinds of Manuscripts Sought

Environmental Practice publishes several categories of manuscripts as described below. Two of these categories, Research Articles, and Environmental Reviews and Case Studies, are peer reviewed.

Research Articles: Manuscripts that report the results of systematic study on an environmental problem. Typically, research articles will (a) report the results of formal research or (b) summarize systematic analysis of one or more case studies of particular interest. Environmental professionals in academic or research laboratory settings may be more likely to submit formal research manuscripts. Professionals in consulting practice, agencies, or other organizations may be more likely to submit manuscripts based on case studies. Under most circumstances, Research Articles will not be over 5000 words of text. Most will be substantially shorter. Tables, figures, and reference lists need not be included in the word count. All Research Articles are peer reviewed.



Environmental Reviews and Case Studies: Manuscripts that organize and summarize a research literature similar to a meta-analysis. These manuscripts help clarify a problem, illustrate policy-making processes, or assist in pointing out discrepancies in the research of the topic over time, with greater emphasis placed on the details of a project than on data analysis. Case study oriented manuscripts provide readers with a unique insight on a development in the professional field using a case as an example or illustration; simple project reports will not be accepted. Environmental Reviews and Case Studies will generally be about 6000 words of text. Tables, figures, and reference lists need not be included in the word count. All Environmental Reviews and Case Studies are peer reviewed.

Reviews: Manuscripts portray the content, quality, and significance of books or films of wide interest to environmental professionals and their practices. Reviews should normally not exceed 750 words, but with the approval of the editor may reach 1500 words.

Perspectives from the Field: Statements of informed opinion intended to provoke discussion and debate on particular issues. These manuscripts will generally range from 500 to 1000 words. Such manuscripts will not be subject to peer review, because they are personal opinion; however, the editor may seek advice on matters of tone and fairness.

Dialogue: Responses to other manuscripts or controversies within the professional or academic discipline. These manuscripts will generally range from 50 to 500 words, and take the form of a letter to the editor. Dialogues will not be peer reviewed, but they may be used to solicit responses from others for simultaneous publication. ■

Contact: Ruth Gaulke at ruth.gaulke@gmail.com

Get your CEP — Save Thousands of Dollars

The Academy of Board Certified Environmental Professionals (ABCEP) has just partnered with American Public University (APU) to allow up to 6 transfer credits to those who hold the Certified Environmental Professional (CEP) credential. The value of these credits can substantially reduce the cost of a Masters of Science Degree in Environmental Policy and Management or can serve to offset elective credits in other Masters programs at APU.

Certifying Environmental Professionals since 1979

To find out the details, go to http://www.apus.edu/TransferCredit/accepted/graduate/internal-policies/abc-env-prof.htm or visit the ABCEP website: www.abcep.org.

Some information on APU:

- It is the first, fully online university to receive the Sloan Consortium's (Sloan-C) Ralph E. Gomory Award for Quality Online Education (2009) and two-time recipient of the Sloan-C Effective Practice Award (2009 – 2010).
- APU has more than 150 degree and certificate programs as well as online courses to help with certifications and professional development in subjects ranging from Environmental Hazard Mitigation and Restoration (Grad Cert); Environmental Planning and Design (Grad Cert); Environmental Policy and Management (Capstone, MS); Environmental Risk Assessment (Grad Cert); Environmental Science with four concentrations (BS), Environmental Sustainability (Grad Cert); Environmental Technology (Undergrad Cert), Fish and Wildlife Management (Grad Cert, Undergrad Cert), Transportation & Logistics, Business Administration, Information Technology, and many others.
- APU's combined undergraduate tuition, fees and books are roughly 20% less than the average 4-year public university's in-state rates, helping to maximize your tuition assistance program. (The College Board, *Trends in College Pricing 2011,* October 2011.)
- APU will carefully evaluate prior learning, including eligible on-the-job learning, for the award of academic credit.

This gives you another excuse to apply for your CEP today.

Please Donate to the James Roberts Scholarship Fund

You may not have known him.

Yet you were certainly influenced by him.

Honor his legacy.

Donate to the James Roberts Scholarship Fund TODAY.

Jim Roberts travelled far and wide to espouse the worth of living an ethical life, including the way you performed your job. He lived the Code of Ethics and Standards of Practice for Environmental Professionals.

NAEP has developed the James Roberts Scholarship Fund to assist promising individuals while they are still in school. This is your opportunity to preserve and extend the legacy of Jim Roberts.

All donations are tax-deductible. Go to www.naep.org and link to http://www.naep.org/jim-roberts-scholarship-fund. You can also donate when you renew your NAEP membership.

Thank you,
Charles P. Nicholson, Chair

Become a Certified Environmental Professional (CEP)

OBTAIN THE RECOGNITION YOUR CAREER DESERVES:

- *Do you have an environmental certification? Good*
- *Does this environmental certification measure your experience and depth of knowledge, not just facts? Yes*
- *Does this environmental certification include an objective peer review of your abilities? Yes*
- *Is your environmental certification accredited by a third-party certifying body? Yes*
- *Then your environmental certification must be a CEP from The Academy of Board Certified Environmental Professionals (ABCEP).*

Certification is available in five areas:

- Assessment
- Documentation
- Operations
- Planning
- Research/Education

Beginning in 1979, experienced environmental professionals were able to become certified through a comprehensive peer review addressing years of experience, responsibility, and knowledge. Certifications are nationally-recognized and available for a wide range of eligible professionals including:

- Federal/state/local agency staff - Consultants - Researchers - Compliance managers
- Enforcement officials - Activists

Initially offered as a certification through the National Association of Environmental Professionals (NAEP), the Academy of Board Certified Environmental Professionals (ABCEP) established organizational independence in 1993. In 1999 ABCEP became a nonprofit organization. In 2005, the ABCEP achieved accreditation by the Council of Engineering and Scientific Specialty Boards (CESB – www.cesb.org)

The ABCEP CEP brings heightened confidence in the professional quality of documents, evaluations, and decisions. Certified individuals satisfy the professional requirements outlined by the USEPA, ASTM, and other regulatory agencies, providing assurance to employers and customers. For the individual, certification increases opportunities for promotions, marketability, and career advancement. Certified individuals maintain their knowledge, experience, and credentials through continuing education, teaching, mentoring, publishing papers, and complying with the Code of Ethics.

Become a CEP-IT: The ABCEP offers mentoring and a CEP-In Training (CEP-IT) designation to junior and mid-level professionals developing towards CEP eligibility. The CEP-IT increases individual and firm marketability, enhanced career opportunities, and enhanced networking opportunities.

More Information: Contact ABCEP at office@abcep.org; www.abcep.org; or 1.866.767.8073 Do you have an upcoming meeting and need a speaker? Speaker opportunities by CEPs about ABCEP are available in certain geographic locations.

National Association of Environmental Professionals

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naep@naep.org * www.naep.org

The National Association of Environmental Professionals (NAEP) is...

. . . the multi-disciplinary association for professionals dedicated to the advancement of the environmental professions.
. . . a forum for state-of-the-art information on environmental planning, research and management.
. . . a network of professional contacts and exchange of information among colleagues in industry, government, academia, and the private sector.
. . . a resource for structured career development from student memberships to certification as an environmental professional.
. . . a strong proponent of ethics and the highest standards of practice in the environmental professions.

Membership includes:

- Subscription to the peer-reviewed, quarterly journal *Environmental Practice*
- The NAEP Newsletter "*News for the Environmental Professionals*" which includes technical articles and association news.
- Access to the NAEP "*National Desk*" which is sent to NAEP members every two weeks and includes between 3-5 articles pulled from the E&E Publishing Publication "*Greenwire*".
- Discounted fees for NAEP events:
  - Annual Conference
  - Educational Courses and Seminars
- Discounted registration fees to our series of webinars
- Opportunities to advance personally and professionally through leadership positions in NAEP committees and the National Board of Directors
- Access to various reports completed by our Committees
- Access to a Career Center specifically targeted to the Environmental Professional
  - Confidential search profile, Online Management tools, Automatic new job e-mail notification
- Avenues to network with professional contacts in industry, government, academia and the private sector
- Members sign the Code of Ethics and Standards of Practice for Environmental Professionals

Why You Should Join:

- NAEP provides the access and network for you to grow as a professional. By providing three great publications in the peer reviewed *Environmental Practice* Journal and the revised and expanded NAEP E-News. Members get access to *Environmental Practice* online. Our Affiliate Chapters provide a wealth of educational and networking events. We have established Affiliate Chapters throughout the US and if there is not one in your area please contact us. We have many chapters forming in many parts of the country. NAEP has an established webinar series run by our Education Committee. NAEP produces between 6-12 webinars each year. Please visit the NAEP website for a current list of webinars being offered. This is a great time to get involved with NAEP. Please consider joining and getting involved in a Committee. Our sincere hope is we can learn from each other since that is the true power of an association.

How to Join:

- Call or email Tim Bower or go to our website www.naep.org . Tim can be reached at 856-283-7816 or by email at naep@naep.org .