


# John H. Kerr Lake Reallocation

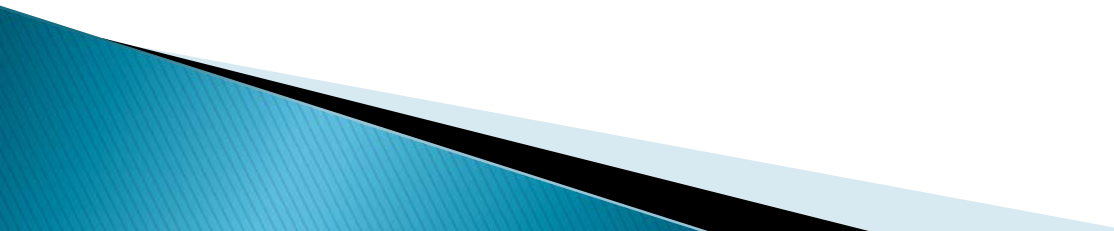
Roanoke River Basin Bi-State Commission  
November 6, 2013

Perry Memorial Library, Henderson, North Carolina





The Roanoke River Basin Bi-State Commission was established as a bi-state commission composed of 18 members from the State of North Carolina and the Commonwealth of Virginia. The purposes of the Commission, as defined by NC General Statutes §77-91, are:

- ▶ Provide guidance and make recommendations to local, state, and federal legislative and administrative bodies, and to others as it deems necessary and appropriate, for the use, stewardship, and enhancement of the water, and other natural resources, for all citizens within the Basin.
  - ▶ Provide a forum for discussion of issues affecting the Basin's water quantity and water quality and issues affecting other natural resources.
  - ▶ Promote communication, coordination, and education among stakeholders within the Basin.
  - ▶ Identify problems and recommend appropriate solutions.
  - ▶ Undertake studies and prepare, publish, and disseminate information through reports, and in other forms, related to water quantity, water quality, and other natural resources of the Basin. (2002 177, s. 1.)
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# Session Law 2012-200

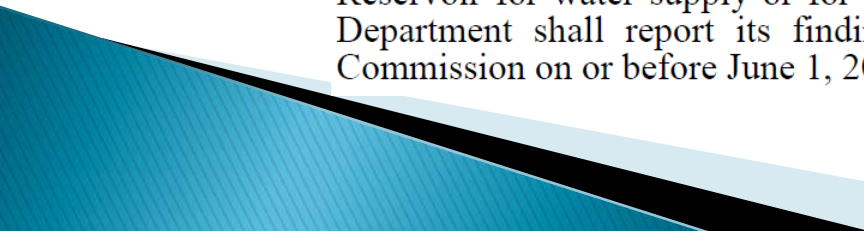
## Senate Bill 229

### **PART II. STUDY REALLOCATION OF WATER SUPPLY IN KERR LAKE**

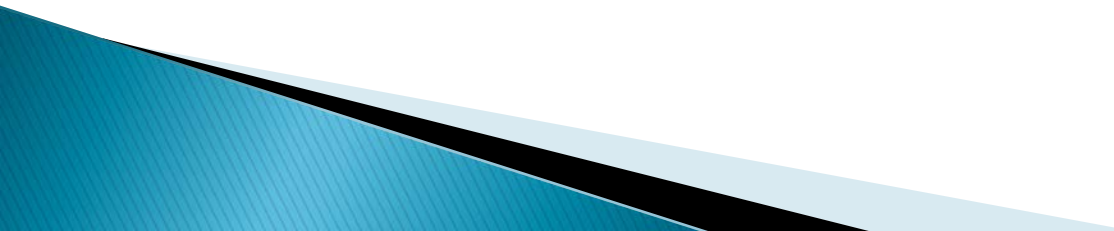
**SECTION 2.(a)** The Department of Environment and Natural Resources shall study the advisability and feasibility of reallocating water supply in John H. Kerr Reservoir from hydropower storage to water supply storage. The study shall identify the projected future water supply needs that could be met by reallocation of the water supply and identify any potential impacts of a water supply reallocation. In conducting this study, the Department may:

- (1) In consultation with the Virginia Department of Environmental Quality, develop a Roanoke River Basin Water Supply plan that identifies future water supply needs in both the North Carolina and Virginia portions of the river basin. The water supply plan may provide the basis for determining water supply needs that could be met by reallocation of the water supply in John H. Kerr Reservoir.
- (2) Include a recommendation for an agreement between the State of North Carolina, the Commonwealth of Virginia, and the United States Army Corps of Engineers that will provide guidance for allocations and reallocations of water supply in John H. Kerr Reservoir to enhance the public health, safety, and welfare by fostering efficient and sustainable use of the water that meets economic, environmental, and other goals.
- (3) Identify and review any other issues the Department considers relevant to the topic.

**SECTION 2.(b)** In conducting this study, the Department shall consult with the Virginia Department of Environmental Quality, the United States Army Corps of Engineers, and any local government or other entity that receives an allocation from the John H. Kerr Reservoir for water supply or for other purposes as of the effective date of this section. The Department shall report its findings and recommendations to the Environmental Review Commission on or before June 1, 2014.

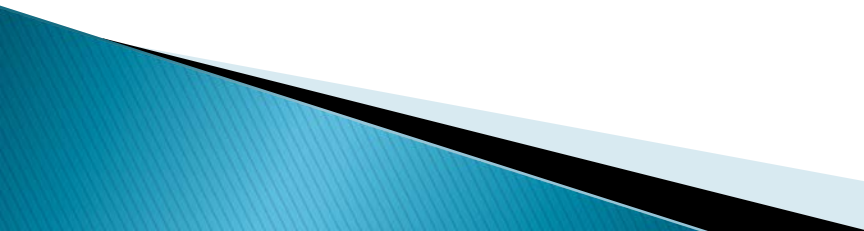


“Reallocation or addition of storage that would seriously affect other authorized purposes or that would involve major structural or operational changes requires Congressional approval. Provided these criteria are not violated, 15 percent of the total storage capacity allocated to all authorized project purposes or 50,000 acre feet, whichever is less, may be allocated from storage authorized for other purposes. Or, this amount may be added to the project to serve as storage for municipal and industrial water supply at the discretion of the Commander, USACE.”





# Principles of John H. Kerr Water Supply Allocation

- ▶ **Economic Feasibility** – This principle has to do with cost of a project/s that would require an allocation of water from the source basin (Kerr Lake) as compared to alternatives.
  - ▶ **Security**– An understanding and evaluation of the potential dangers of damage or disruptions to the project caused by both natural and unnatural events such as, storms, floods, vandalism, and disgruntled citizens as well as terrorists.
  - ▶ **Regional Economic Benefits and Costs for both the Source and Receiving Basins**– This principle speaks to the need for a complete and accurate analysis of costs and benefits. There are well-established economic models that estimate economic benefits beyond first-order benefits (i.e. ultimate changes in employment and economic growth) for regions, and it would be optimal to have some way to see whether proposed projects use water in ways that maximize net benefits relative to other proposed uses. At the same time, the call for "completeness" and "net benefits" acknowledges the desire to understand non-market costs, such as instream and floodplain ecological effects.
  - ▶ **Short Term Need and Availability of Alternatives**– This principle seeks to provide those in charge of allocation with facts that can be used in determination of the urgency and priorities of the request. As an example, the difference between requests for allocation to be used 20/40 years from now versus those within the current planning horizon.
  - ▶ **Reserving Flexibility**– This principle calls for the need for any Allocation protocol to have within it a process for "water banking", i.e., expiration dates on unused allocation or portions thereof to be re-deposited for more urgent or future use when appropriate.
  - ▶ **Consistency of Approach with other Southeastern States** – This principle speaks to the need to recognize the fact that allocation out of Roanoke resources are just one of many water allocations scenarios currently being addressed in the South Eastern area of the U.S. It therefore suggests that allocation protocols from both Federal and State watersheds should be relatively consistent rather than radically different in approach.
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# Draft Agreement (March 25, 2010)

The committee started by developing a set of basic allocation principles that became parts I Purpose and II Declaration of Policy in the draft agreement. A set of five alternative allocation approaches were developed for the Commission's consideration. The following is the start of a draft agreement which will be completed based on the Commission's guidance as to which alternative they want the committee to expand upon.

## **PART I. PURPOSES**

The purposes of this agreement are:

- ▶ For the State of North Carolina and the Commonwealth of Virginia to provide the U.S. Army of Engineers a set of guidelines for allocation of John H. Kerr water supply allocations.
- ▶ To preserve and protect the water resources of the Roanoke River Basin.
- ▶ To facilitate integrated comprehensive water resources planning of the Roanoke River Basin.



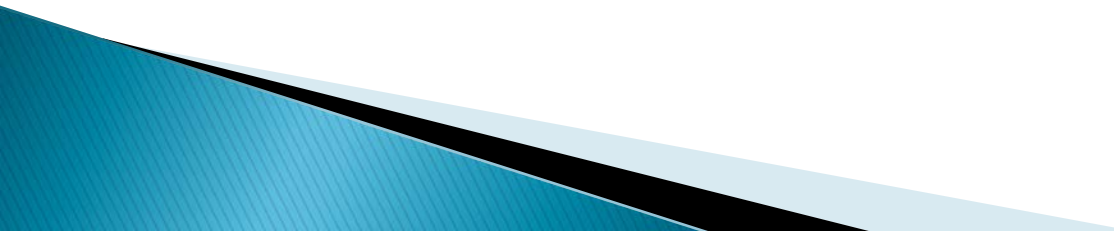
## PART II. DECLARATION OF POLICY

The following principles constitute the policy that shall govern the allocation of John H. Kerr water supply storage.

- ▶ Allocations/reallocations will enhance public health, safety, and welfare by fostering efficient and sustainable use of water in satisfaction of economic, environmental, and other social goals; factors that contribute to this end include:
  - Stimulation of economic growth
  - Protection of water quality
  - Protection of ecological integrity and diversity
  - Encouragement of water conservation
  - Minimization of drought impacts on all water uses
  - Minimization of conflict among competing water uses
  - Maintenance of an appropriate balance between instream and offstream water uses
  - Protection of property values and water infrastructure investment
- ▶ The States and U.S. Army Corps of Engineers shall coordinate the planning and decisions pertaining to water allocation, and shall adapt and update plans and hydrologic models to ensure that actual and projected water consumption in the basin plus the water needed for instream uses does not exceed the water supply. The allocations shall be made so as to conserve the waters of the basin through suitable policies and by encouraging private efforts to conserve water and avoid waste.
- ▶ The States and U.S. Army Corps of Engineers shall protect the public interest in the waters of the basin by providing an orderly strategy to allocate available water efficiently and equitably in times of water shortage or water emergency.
- ▶ No person using the waters of the basin shall cause unreasonable injury to other water uses made pursuant to valid water rights, regardless of whether the injury results from the quality or the quantity impacts of the activity causing the injury.
- ▶ Uses of the waters of the basin on nonriparian or nonoverlying land are lawful and entitled to equal consideration with uses on riparian or overlying land in any administrative or judicial proceeding relating to the allocation, withdrawal, or use of water or to the modification of a water right. Nothing in this agreement shall be construed to authorize access to the waters of the basin by a person seeking to make a nonriparian or nonoverlying use apart from access lawfully available to that person.
- ▶ The reasonably foreseeable future water needs of users with their service areas located primarily outside the Roanoke River Basin are subordinate to the reasonably foreseeable future water needs of users with their service areas located primarily in the Roanoke River Basin. The States shall protect the reasonable needs of the basin of origin through the regulation of withdrawals.

# **Alternatives for Allocating John H. Kerr Water Supply Storage**

The following are five alternative strategies developed by the Water Allocation Ad Hoc Committee for the commission's consideration.





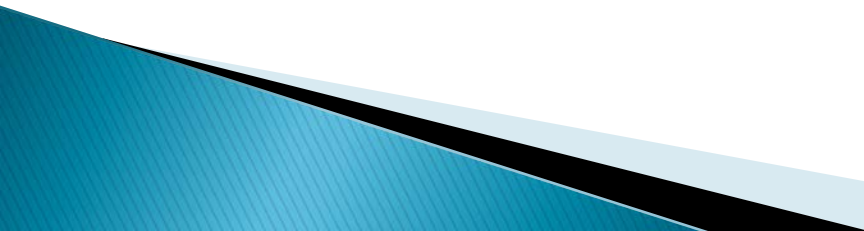


## Status Quo – USACE's process is adequate and no changes are needed

The current allocation of storage to municipal and industrial M&I water supply in reservoirs owned and operated by the USACE is controlled primarily by the Water Supply Act of 1958 (WSA). The WSA provides that M&I storage can be included in project design as an authorized purpose under specified conditions and allows limited reallocation to M&I purposes from other authorized purposes. The principal condition associated with inclusion of M&I storage in the original project design is that use of such storage requires contractual arrangements for repayment of costs associated with the M&I purpose by the water user. Reallocation of storage to M&I water supply is constrained by the condition that such reallocation "... which would seriously affect the purposes for which the project was authorized, surveyed, planned, or constructed, or which would involve major structural or operational changes[,] shall be made only upon the approval of Congress" (WSA sec. 301). Thus, only relatively minor reallocations can be implemented by USACE without Congressional approval. **The WSA does not provide guidelines for determining when a serious effect or major change has occurred. USACE regulations allow for reallocation without Congressional approval if the total project reallocation to water supply storage does not exceed the lesser of 15% of total project storage capacity or 50, 000 acre feet. Recent court rulings have reflected a more restricted view of USACE authority to reallocate storage without Congressional approval.**

Since USACE decisions about use of reservoir storage space are not intended to resolve water rights issues associated with use of the water and do not constitute an allocation of water, deliberations concerning a request for assignment of storage rights primarily focus on satisfaction of requirements for repayment and, in the case of a reallocation of storage, determination of whether Congressional approval is needed. The absence of water allocation authority precludes a comprehensive approach that attempts to anticipate and manage basinwide water supply conflicts and issues. While some consideration is given to environmental and broad water supply issues, they tend to be secondary to narrower issues of project management consistent with federal mission and mandates. This approach tends to treat allocation on a "first come, first served basis" due to its more limited perspective and the lack of a principal federal role in water allocation.

**This option will not impair or affect the existing water management authorities for either the State of North Carolina or the Commonwealth of Virginia.**





## *Pros*

- Requires no new program development or additional resources.

## *Cons*

- Offers potential for incompatibility between federal storage allocation decisions and state water supply plans and management programs.
- This approach provides for less certainty on how much water is and will be available for water supply. In large part because of Atlanta's water supply problems and the USACE's handling of Lake Lanier it is likely the WSA will be modified or replaced and if that occurs, the 50,000 ac-ft assumption is probably no longer valid.



## Modified Status Quo – Let the USACE handle the allocation with some guidelines provided by States

The current approach, with relatively modest modification, could provide a framework for a more comprehensive approach to water supply management that better integrates allocation of reservoir storage into broader water supply management programs of the affected states. The primary mechanism for improved coordination between federal reservoir managers and state water supply management would be a joint federal/state workshop for identification and analysis of related issues associated with proposals for new or expanded allocations of reservoir storage for M&I purposes. Such proceedings could inform federal decision makers about potential water supply conflicts between proposed storage allocations and alternative water development plans in the affected area. The expanded procedure would allow earlier identification of future conflicts and facilitate development of cost effective solutions. Such an approach could be structured in various ways, but the limitations of a single meeting for analyzing complex issues and developing appropriate solutions suggest that a two-stage format would be advantageous. The first meeting would focus on stakeholder and issue identification and would involve establishment of groups of interested parties to further analyze major issues and develop alternative strategies for resolution following the meeting. These recommendations would provide a basis for a second meeting where consensus would be sought on the best way forward. To avoid lengthy delays, the second meeting should be scheduled within a relatively short time of the initial meeting. The final meeting would not necessarily result in agreement on the appropriate course of action; unresolved issues would likely remain to be addressed through currently existing mechanisms. But the fact that the process provides an opportunity for a more comprehensive view of water supply issues improves the information base and should facilitate subsequent decisions.

**This option will not impair or affect the existing water management authorities for either the State of North Carolina or the Commonwealth of Virginia.**





## *Pros*

- Increases coordination between federal water storage allocation and overall state water supply management.
- Requires less disruption and fewer additional resources than approaches adopting more substantial changes to existing storage allocation procedures.
- If both States agree the USACE would be able to implement today.

## *Cons*

- Requires program development and additional resources.
- May increase the time needed for allocation decisions.
- This approach provides for less certainty on how much water is and will be available for water supply. In large part because of Atlanta's water supply problems and the USACE's handling of Lake Lanier it is likely the WSA will be modified or replaced and if that occurs, the 50,000 ac-ft assumption is probably no longer valid.



# The States purchase the remaining storage and handle allocations

As stated earlier, the current allocation of storage to M&I water supply in reservoirs owned and operated by the USACE and the allocations are based primarily by the WSA. The USACE and the WSA do not provide for a good way to include one of this agreement's key policy statements – The States and USACE shall coordinate the planning and decisions pertaining to water allocation, and shall adapt and update plans and hydrologic models to ensure that actual and projected water consumption in the basin plus the water needed for instream uses does not exceed the water supply.

An allocation approach is similar to the current Jordan Lake water supply allocation process and would provide a model on how to allocate water from Kerr based on the needs of water users in the basin. To be able to implement this approach both States will need purchase their agreed-upon share of the remaining unallocated water supply storage in Kerr. Each State would also have to pass the necessary statutory authorities and administrative rules to assign storage and receive repayment from local governments for their allocation. The statutory authorities would be based on principles and polices of this agreement. This approach will work best if it includes the development of a bi-state basin wide water supply plan.

If the Kerr allocation process were to be similar to the Jordan process the basic steps for an allocation would be:

- A local government would submit a request for a new or increased allocation. This typically only occurs once every 5 to 8 years.
- The States would hold a joint information meeting announcing the start of an allocation process.
- The States would work with potential applicants and other water users in the basin to update the basin hydrologic model and water supply plan.
- The applicants would submit their allocation request requested based on the needs identified in the basin water supply plan.
- Each State would make allocations for requests from applicants in their State based on their remaining unallocated water guided by the basin water supply plan.

▶ As part of the allocation the States will review existing allocation holders to determine if adjustments are needed for the current allocations. **Based on NC's experiences with Jordan Lake, it takes about 2 years to update the basin water supply plan and process allocation applications, if there is no interbasin transfer involved.** That is compared to **the USACE's current process that takes 2 or more years.**

**This option will not impair or affect the existing water management authorities for either the State of North Carolina or the Commonwealth of Virginia.**





## *Pros*

- One of the advantages of this approach are it provides a mechanism to base allocations on the long-range needs and protects the instream needs by using updated models and planning.
- The contracts between the States and allocation holders provide for an opportunity to include additional water efficiency and drought protection measures.
- Also, this approach provides for more certainty on how much water is and will be available for water supply. In large part because of Atlanta's water supply problems and the USACE's handling of Lake Lanier it is likely the WSA will be modified or replaced and if that occurs, the 50,000 ac-ft assumption is probably no longer valid.

## *Cons*

- This approach is expensive and lengthy, both to setup and process allocation applications. For both States find funds to finance their share of the \$11,567,177.15 and pass the necessary statutory authorities will likely take at least 2 years.



## Interstate Compact

The interstate compact scenario would entail the development of a compact between the State of North Carolina, the Commonwealth of Virginia and potentially the Federal Government outlining a process for management of the Roanoke River Basin's water resources, including the allocation of water storage in Kerr Reservoir. This scenario could incorporate the purchase of the remaining storage allocation by the states. The compact would need to meet federal requirements, be ratified by both states, and would likely result in the establishment of a Commission with staff that would be funded at least partially by the signatories. Compacts in other watersheds have resulted in the creation of Commissions with a range of responsibilities. For example, the Interstate Commission on the Potomac River Basin serves a largely planning role while the Susquehanna River Basin Commission and the Delaware River Basin Commission each hold regulatory authorities.

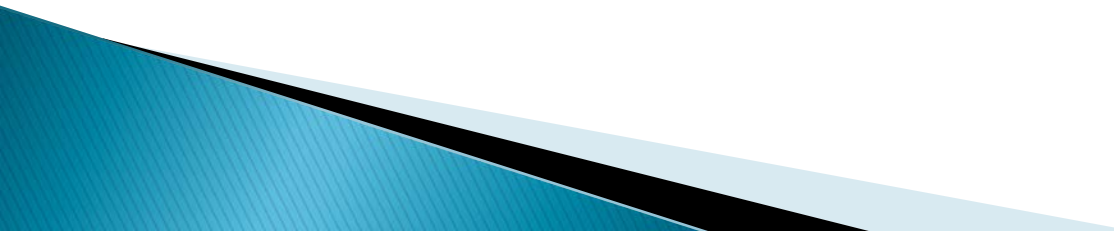
The committee was tasked with making recommendations for water allocations from Kerr Reservoir. Unlike the other alternatives reviewed, this option is broader and will address basinwide water management issues.

**This option could impact the existing water management authorities for either the State of North Carolina or the Commonwealth of Virginia.**

### *Pros*

- A commission established by an interstate compact would have authority to assist in resource management in both states.
- Cooperation between the states and efficiencies may be enhanced by the process of the creation of the compact.
- This scenario may allow for the incorporation of principles limiting water transferred outside of the basin (pro for some, con for others).

### *Cons*

- The establishment and approval of the compact would likely be a lengthy process.
  - The establishment of a commission would result in additional costs and staff during a tough budget climate.
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## Identify a third party to purchase the allocation

The third party purchase scenario would entail the purchase of all or a significant portion of the remaining Kerr Lake storage allocation by an entity other than the State of North Carolina or the Commonwealth of Virginia. The most likely candidate for such a purchase would be a group of municipalities. The purchasing entity would be responsible for determining the process of managing the storage and allocating and distributing the purchased storage to its members or other interested parties. While the states could play an advisory role in the development of the process for managing the allocation, the purchasing entity would ultimately be responsible. Under this scenario, applicable water withdrawal permitting requirements of the respective states would remain applicable.


An analogous arrangement is the Cooperative Operations for Water Supply on the Potomac Section (CO-OP) of the Interstate Commission on the Potomac River Basin (ICPRB). CO-OP was created by an agreement between ICPRB and the three major Washington, DC area water utilities. CO-OP is responsible for coordinating the water resources of the three utilities as one entity during periods of low flow in order to maximize efficiency. Each utility gives up some autonomy for the benefits of improved operations and reliability during a drought.

**This option will not impair or affect the existing water management authorities for either the State of North Carolina or the Commonwealth of Virginia.**

### *Pros*

- Cooperation between the actual users of the water would be enhanced and may result in improved efficiencies.
- The likelihood of "water grabs" may be reduced if the members of the purchasing entity establish a mutually beneficial management agreement.

### *Cons*

- This scenario could result in the transfer of significant portions of the remaining allocation to areas outside of the Roanoke River drainage basin.
  - The states role in determining the distribution of the allocation could be limited.
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1/19/2010

**Updated Cost of Storage at John H. Kerr Dam and Reservoir  
for Estimating Reallocation to Water Supply**

Description	As-Built Joint-Use Costs (\$)	ENR Index Ratio	CWCCIS Index Ratio	Land Update Factor	FY 2010 Joint-Use Cost (\$)
Lands and Damages	10,401,000			16.057 1/	167,008,857
Relocations	14,810,000	2.2516	7.0946		236,577,922
Reservoirs	5,140,000	2.2516	7.6498		88,532,849
Dams	24,601,000	2.2516	7.0521		390,627,184
Roads, Railroads & Bridges	1,043,000	2.2516	7.0946		16,661,092
Buildings, Grounds, and Utilities	570,000	2.2516	6.9931		8,975,028
Permanent Operating Equipment	380,000	2.2516	6.9931		5,983,352
<b>Total Cost</b>	<b>56,945,000</b>				<b>914366285</b>

Footnote: 1/

Derivation of Factor:  
 As-built Joint-Use Cost (-) Lands and Damages = \$ 46,544,000  
 FY '10 Cost (-) Lands and Damages = \$747,357,428  
 Ratio 747,357,428/46,544,000 = 16.057

The calculation for the updated cost of storage from John H. Kerr Reservoir for 1 acre-foot of storage (out of a total usable storage of 2,262,421 acre-feet) is as follows:

$$\text{FY 10 Cost per AF: } \frac{\$914,366,285 \times 1 \text{ acre-foot}}{2,262,421 \text{ acre-feet}} = \mathbf{\$404.15}$$

To account for O&M + RRR portion of total cost use ~ \$1.5/AF/year/user

$$\text{Total FY 10 Cost per AF: } = \mathbf{\$405.65}$$

# Questions?

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