Safety First

Building Emergency Plan
Today’s Meeting
**Agenda – April 26, 2016**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presenter/Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30</td>
<td>TVA Welcome</td>
<td>Joe Hoagland, Designated Federal Officer</td>
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<tr>
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<td>RRSC Welcome</td>
<td>Avis Kennedy, Council Chair</td>
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<tr>
<td></td>
<td>Introductions and Agenda Review</td>
<td>Lee Matthews, Facilitator</td>
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<tr>
<td>8:45</td>
<td>FACA Briefing</td>
<td>Kendra Mansur, Office of the General Counsel</td>
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<tr>
<td>8:50</td>
<td>DFO Briefing</td>
<td>Hoagland</td>
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<tr>
<td>9:05</td>
<td>Natural Resources Update</td>
<td>Rebecca Tolene, Deputy General Counsel and Natural Resources</td>
</tr>
<tr>
<td>10:00</td>
<td>Break</td>
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<tr>
<td>10:15</td>
<td>Public Comment Period</td>
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<tr>
<td>11:15</td>
<td>Natural Resource Programmatic Agreements</td>
<td>Brenda Brickhouse, Vice President Environment and Energy Policy</td>
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<tr>
<td>11:45</td>
<td>Lunch Break</td>
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<tr>
<td>12:45</td>
<td>Reservoir Release Improvement Program</td>
<td>Lana Bean, Manager, Water Quality Support</td>
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<tr>
<td>1:30</td>
<td>TVA Communications</td>
<td>Mike Bradley, Jessica Coleman, Travis Brickey</td>
</tr>
<tr>
<td>2:15</td>
<td>Wrap Up and Adjourn</td>
<td>Kennedy / Hoagland</td>
</tr>
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</table>
Meeting Goals

- Provide an update on TVA Natural Resources and how TVA is using RRSC Advice
- Provide an overview of the Reservoir Release Improvement Program where TVA is proactively supporting biologic health of reservoirs
- Provide an overview on TVA Communication activities
- Provide information on TVA’s approach to developing programmatic agreements related to Natural Resource issue areas.
- Thank Members for the 8th Term of service.
The Federal Advisory Committee Act

and

The Regional Resource Stewardship Council

FACA Briefing—Eighth Term

Final Meeting
Advisory Committees Today

- Play an important role in shaping programs and policies
- Approximately 1000 committees with more than 60,000 members
- Advise the President of the United States and the executive branch
- Subject to FACA and General Services Administration (GSA) Regulations
Key Elements of the Federal Advisory Committee Act

Public access

• Meetings (reasonably accessible and timely notice required—generally open to the public)
• Records (available for public inspection, subject to limitations)

Structured management

• Filed charters
• Expiration after two years
• Attendance of a federal officer
TVA’s Regional Resource Stewardship Council

TVA’s stewardship activities include:

- Operation of its dams and reservoirs
- Navigation and flood control
- Management of lands in TVA custody and control
- Water quality
- Wildlife
- Recreation
- 26a permitting
Thank you for your participation.
TVA Natural Resources Update

Rebecca Tolene
Deputy General Counsel and Natural Resources
**Agenda**

- RRSC Guidance Put Into Practice
- Status Update on Lands Planning
- Introduction of the Permit Us to Help You Campaign
- Status Update on Floating Houses
Overview of TVA Natural Resource Programs

- Wildlife Mgmt. & Enhancement
- Public Land Management
- Cultural Resource Protection
- Aquatic Plant Mgmt. Program
- Education & Public Outreach
- Eco-Tourism
- Land Planning & Uses
- Recreation
- Shoreline Management
- Water Resources
Implemented RRSC Guidance Results for Outreach & Communications

- Increase outreach to schools, marinas, and community members
- Make information easy to find and understand
- Increase visibility of TVA’s stewardship work by:
  - Participating in outreach events sponsored by others
  - Events and media at the local/county level
  - Maximizing web pages and social media
- Use interpretive signs to increase awareness of cultural and natural resources
Implemented RRSC Guidance Results for Stewardship Efforts

- Continue to protect nonrenewable resources
- Protect and improve wildlife habitat
- Keep water quality a priority
- Use erosion controls to preserve public lands and resources
- Consider concessionaire operator for campground management
- Increase tourism efforts with local communities and states
Implemented RRSC Guidance Results for Enhanced Productivity

- Establish metrics to gauge success and progress
- Increase internal collaboration
- Take care of and maintain existing assets first
- Consider partnership support for future maintenance of new projects
- Develop signature stewardship projects
Weekly Dashboard
Implemented RRSC Guidance Results for Partnerships

• Make it easy to work with TVA
• Leverage partnership funds
• Build and enhance partnerships with recreation partners, local municipality, nongovernmental organizations, tourism organizations, realtors, universities, and colleges
• Explore public/private partnerships
• Engage local power companies to promote TVA stewardship
Success Stories

• Enhanced visitors’ experiences at TVA Dam Reservations
  - TVA Visitor Centers
  - Recreation facilities
  - ADA
• Boosted local economy through Ecotourism in Dayton, TN
• Initiated research with university partners and others
• Engaged new volunteers through programming
TVA Lands Planning
TVA Property Acquisition and Utilization

~1.3 million acres acquired since 1933

- Sold or Transferred: 509,000 acres
- Power, Transmission, & Corporate: 38,000 acres
- Reservoir Land: 293,000 acres
- Land Under Water: 470,000 acres
Land Planning Zones

- Residential Shoreline Access: ~14,000 acres
- Developed Recreation: ~21,200 acres
- Project Operations: ~21,200 acres
- Industrial: ~4,200 acres
- Sensitive Resource Management: ~50,000 acres
- Natural Resource Conservation: ~182,300 acres
TVA’s Reservoir Land Planning Process

- Reservoir land management plans (RLMPs) guide TVA’s management decisions on natural resources and property administration and provide a clear statement of how TVA intends to manage its public lands.

- Public input is sought during the planning process and completed RLMPs are adopted as agency policy.

- Demands on public lands will only increase into the future, and the planning process has demonstrated that it is a good tool to develop a balance between competing uses.
Comprehensive Valleywide Land Plan (CVLP) & Reservoir Land Management Plans

• CVLP allocates a certain percentage of land for each of the seven zones (with the exception of Zone 1, easement land) across the entire Valley

• RLMPs allocate public land use percentages by reservoir based on staff expertise, resource data, computer analyses, agency input, and public comments

  – Information included in these eight RLMPs will be used to revise its CVLP
## Proposed CVLP Allocation Range

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Zone 2  Project Operations</td>
<td>5% to 7%</td>
<td>7% to 10%</td>
</tr>
<tr>
<td>Zone 3  Sensitive Resource Management</td>
<td>16% to 18%</td>
<td>14% to 18%</td>
</tr>
<tr>
<td>Zone 4  Natural Resource Conservation</td>
<td>58% to 65%</td>
<td>56% to 63%</td>
</tr>
<tr>
<td>Zone 5  Industrial</td>
<td>1% to 2%</td>
<td>1% to 3%</td>
</tr>
<tr>
<td>Zone 6  Developed Recreation</td>
<td>8% to 10%</td>
<td>8% to 10%</td>
</tr>
<tr>
<td>Zone 7  Shoreline Access</td>
<td>5%</td>
<td>5% to 6%*</td>
</tr>
</tbody>
</table>

*TVA allocates land to Zone 7 (Shoreline Access) in accordance with TVA’s Shoreline Management Policy.
CVLP Implemented RRSC Guidance

• Outreach and Communications
  − Communication with the public focusing on explaining each land use zone
  − Scoping for the CVLP kicked-off with paid ads in the communities where RLMPs would be implemented

• Maximize Web Site and Social Media
  − Developed a land planning review Web site (www.tva.gov/landplanreview)
  − Redesigned the external lands planning Web page so it is easy to access existing RLMPs
Permit Us to help you
Shoreline Construction Permitting

For more information call 1-800-882-5263 or visit www.tva.com/river/26apermits
Section 26a Permitting Outreach

The objective of the campaign is to raise awareness that Section 26a permits are required before any construction can begin.

Target Audiences

- Primary: Those in the market to purchase lakefront property in the TVA Valley
- Secondary: Realtors
- Tertiary: Existing owners of lakefront property in the Valley
Permit Us to Help You - RRSC Guidance

- Better communication
- Easy to find and understand information
- Streamline process
Permitting Outreach Tools

- Permit Us To Help You Campaign
  - Digital banners
  - Print media, including newspapers, magazines, and TVA River Neighbors
  - Realtor direct mailers
  - Realtor outreach
  - Billboards
- Web page updates
- Outreach event participation
Print Media

Focus Areas

• Pickwick and Tellico Reservoirs

• North Alabama communities of Florence, Tuscumbia, Sheffield, and Muscle Shoals

• North Georgia/southern North Carolina communities, including Blue Ridge, Chatuge, Nottely, Hiawassee, and Apalachia
Direct Mail

• Deliver key messages to those in the selling and buying marketplace who have influence and direct contact with homebuyers

• Focus on realtors and home inspectors working in areas adjacent to the Tennessee River and major tributaries
Realtor Outreach

• Hosted realtor workshops
• Sent direct mail and email blasts to waterfront realtors
• Presence in Tennessee Association of Realtors’ newsletter
Billboards
Web Page Updates and Event Participation

- Increasing visibility of Section 26a permitting information
- Increasing staff face-to-face public interactions
Next Steps

• Continue current Permit Us to Help You campaign

• Increase internal communication

• Place story in TVA’s River Neighbors
  - Sign up on TVA’s web page
  https://tva.com/Environment
Public Land Protection Program

TVA staff has begun preparations to develop a Public Land Protection Program which will incorporate:

- Encroachment prevention
- Pursuit of citation authority
- Development of regulations to govern the use of public lands
- Identification of encroachments
- Expansion of the toolset available to resolve encroachments
Floating Houses
Examples of Floating Houses
TVA Concerns

- Residential-type proposals on water
- Structures presented as houseboats but designed and used primarily for habitation at a fixed location

- Need to clarify or update regulations with changing times
- Owner/public/investor expectations
Prevalent Public Comments and Issues

- Safety of electrical, mooring, and anchoring systems
- Water quality: proper management of black and gray water
- Need stronger regulation, policing, and enforcement
- Need minimum safety and environmental standards with regular inspection
- Economic, financial, and personal loss if prohibit/remove floating houses
- Grandfather floating houses and continue to allow nonnavigable houseboats
- Consider an annual fee to fund future management and oversight
Next Steps

RRSC Guidance

• In their April 2015 advice statement the RRSC stated the proposed floating houses policy (B2) with a sunset provision is the most realistic approach to achieve stewardship goals. Also, it was recommended that floating houses be removed in less than 30 years.

• Develop criteria for nonnavigable houseboats and floating houses

Recommendations for Board Consideration

• The proposed floating houses policy to be presented at the May 5, 2016, Board meeting is alternative B2. That requires minimum safety and environmental standards to be met, and for all floating houses and non-navigable houseboats to be removed in 20 years.

• Criteria will be part of the final guidelines
Next Steps

• Release the proposed rules and publish a Notice of Proposed Rule Making in the Federal Register seeking public comments for a 30-day comment period
• May 5, 2016, TVA Board recommendation
• Upon Board approval, complete and publish final rule amendments to Section 26a Regulations and Administrative Cost Recovery Regulations
• Implement the Floating Houses Policy
BREAK TIME
Public Comment Period

- Public participation is appreciated
- This is a listening session; responses are typically not provided
Programmatic Agreements:
Natural and Cultural Resources

Brenda Brickhouse
Vice President Environment and Energy Policy
Alignment with TVA’s Mission of Service

Energy  Environment  Economic Development
Alignment

- National Environmental Policy Act
- Clean Water Act
- Executive Order for Wetlands
- Endangered Species Act
- Executive Order for Migratory Birds
- National Historic Preservation Act
- Archaeological Resources Protection Act

for Landscape and Program Benefits
Common Actions Across Resources

• Natural resources impacts and opportunities managed on individual projects in isolation
• Interpretations, requirements and expectations vary significantly across regulatory offices
• Project-specific consultations increasing yet yielding only incremental mitigation

Programmatic Agreements (PA) Can Provide a Solution
Multi-Pronged Programmatic Approach

• Streamline review processes for a comprehensive array of activities

• Determine impacts of actions on front end programmatically

• Standardize protocols and consultation across federal and state jurisdictions

• Improve outreach and stakeholder engagement

• **Address conservation needs at landscape level and focus resources where most effective!**
Bat Programmatic Consultation

DRIVERS AND APPROACH

• Four federally-listed bats in TVA’s Power Service Area
• Concern heightened due to white-nose syndrome’s fatal impacts to bats
• TVA routinely removes trees for projects, public safety and reliability
• Consultation increasing across environment, energy, and economic development activities
• Project-specific outcomes are increasingly unpredictable
Bat Programmatic Consultation

TIMELINE

Jan 2014: Convened TVA Bat Strategy Team
Nov 2014: Began Consultation w/USFWS R4
Dec 2014: TN USFWS office designated lead
2015: Developed footprint and actions spanning 20 years
Dec 2015-Mar 2016: Visited FWS offices
Remaining Steps:
  ▪ Workshops with FWS offices to review actions
  ▪ TVA-FWS discussions on effects determinations
  ▪ Completion of Biological Assessment
Spring 2017: Executed Programmatic Documents
Cultural Resources PA

- TVA actively manages and considers effects on historic resources
- Soliciting participation from:
  - Advisory Council on Historic Preservation (ACHP)
  - 18 federally recognized Tribes
  - Seven State Historic Preservation Officers
- PA will establish process and criteria streamlining routine compliance activities and for focusing conservation for significant resources
- Kicking off this summer and plan to complete in 2017
Wetland Mitigation Feasibility Study

- Wetland and stream mitigation requirements, procedures, expectations, costs and credit availability varies across the region
- Evaluate feasibility or pilot study to identify strategic approaches to wetland and stream enhancement and mitigation
- Identify opportunities, benefits, and challenges among a suite of options
- Develop a more comprehensive wetland mitigation framework
Anticipated Outcomes

• Ability to address conservation needs at landscape level and focus resources where most effective
• Greater predictability and consistency in project planning
• More efficient project-specific consultations
• More meaningful work aligning with regional resource priorities!
Potential Future Programmatic Endeavors

• Pollinators

• Avian Resources
Questions?
Break for Lunch

Meeting will reconvene at 12:45PM
Background

- In recent years, a substantial number of floating houses have been moored on TVA reservoirs.

- Floating houses pose growing risks to navigation, safety, and the environment and have not been allowable under Section 26a of the TVA Act since 1978.

- Floating houses are not in any real sense watercraft, but instead are used primarily for habitation rather than navigation and convert public waters to private use.
Increased Floating House Volume and Concerns

There are now approximately 1,800 floating houses and nonnavigable houseboats on the reservoir system. Only the pre-1978 nonnavigable houseboats, approximately 900, have TVA permits.

Residential living on the water marketed by developers
Scoping and Environmental Review

Environmental Review- Alternatives

1. No Action Alternative – Current Management
2. Alternative A – Allow Existing and New Floating Houses
3. Alternative B1 – Grandfather Existing and Prohibit New
4. Alternative B2 – Grandfather but Sunset Existing and Prohibit New¹
5. Alternative C – Prohibit New and Remove Unpermitted
6. Alternative D – Enforce Current Regulations and Manage through Marinas and Permits

¹ Alternative B2 is TVA’s “preferred” alternative and is the proposed policy
Concerns Expressed in Public Comments

- Wastewater Discharge
- Need for Stronger Regulations
- Electrical Safety
- Mooring Safety
- Private Use of a Public Resource
RRI Objectives

• Meet dissolved oxygen targets to protect aquatic habitats

• Maintain a wetted riverbed
Turbine Releases

Epilimnion (Oxygen rich)

Hypolimnion (Oxygen poor)
Impoundment impacts

Dry river channels when turbines are not operating

Low dissolved oxygen in dam releases
1991 Lake Improvement Plan

- Committed to improve the quality of releases at 16 TVA dams within a five-year period.
  - Installed aeration equipment to improve dissolved oxygen levels below 16 dams.
  - Implemented minimum flow systems at 13 dams.
- Completed construction of all systems in September 1996.
- Cost: $44 million
2004—Reservoir Operations Study (ROS)

- Initiated in 2001 with study results implemented in summer 2004.
- Enabled TVA to determine whether changes to its operations policy would produce greater public value.
- Modified the balance among the operating objectives for the system resulting in a different mix of benefits that would be more responsive to public values.
Minimum Flow Below Hydro Projects

- Turbine pulsing
- Small Units
- Weirs
Habitat Benefits of In-stream Flow

- More wetted channel area (35%-85% increase in minimum flows)
- Release DO: was 0-3 mg/L now 4-6 mg/L
- Improved attraction water for fish spawning runs
- Continuous flushing of deep natural pools
- Reduced thermal shock
Current Aeration systems

- Turbine venting
- Surface-water pumps
- Oxygen-injection
- Aeration weirs
- Air compressors
Aeration technologies: turbine venting

Capital Costs ~ $150K
Roughly 0.3% of efficiency loss per 1 mg/L of DO uptake

Air is drawn in or forced into the turbine to aerate the releases
Aeration technologies: surface-water pumps

Impeller forces higher DO water at the surface down to the turbine intake, increasing the release DO.

Capital Costs ~ $4 – 6 million for a 9-pump array

Adds 2 – 2.5 mg/L at 4 unit, 14,000 cfs Cherokee

Power Costs 0.5 MW for system
Oxygen-injection
Building diffuser lines
Aeration line distribution

<table>
<thead>
<tr>
<th>Project</th>
<th>Number of Aeration Lines</th>
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<tr>
<td>Watts Bar</td>
<td>6</td>
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<tr>
<td>Tims Ford</td>
<td>4</td>
</tr>
<tr>
<td>Nottely</td>
<td>2</td>
</tr>
<tr>
<td>Norris</td>
<td>3</td>
</tr>
<tr>
<td>Hiwassee</td>
<td>3</td>
</tr>
<tr>
<td>Fort Loudoun</td>
<td>3</td>
</tr>
<tr>
<td>Douglas</td>
<td>10</td>
</tr>
<tr>
<td>Cherokee</td>
<td>13</td>
</tr>
<tr>
<td>Blue Ridge</td>
<td>7</td>
</tr>
</tbody>
</table>

Total of 36.1 miles of aeration lines
Fish community response—Douglas

Number of Native Fish Species found at Saffel Island, tailwater monitoring station near Douglas Dam, Before and After RRI

![Bar graph showing the number of native fish species found at Saffel Island, with improvements initiated marked in 1997.](image)
Results

• Increased dissolved-oxygen concentrations in more than 300 miles of river downstream from TVA dams.
• Improved water flows in 180 miles of river.
Outcomes

- Improvements in tailwater macro invertebrate and fish communities
- Mussel recovery in tailwaters
- Reintroduction of some threatened and endangered species
Lake Sturgeon Makes Comeback

TVA program breathes life into aquatic habitat downstream

TVA water work done

Quality boosted below dam sites

‘Big Water’ Angling

TVA Tailwater Improvements Provide New Opportunities

TVA fights low oxygen levels

Aquatic life rebounds in French Broad
Future

• In an ongoing effort to conserve resources and money, it has been a challenge to replace RRI components in a timely matter.

• The life cycle is about 10 years for some RRI equipment, such as the diffuser lines that carry the LOx out into the reservoirs.

• On average, each year there should be at least one project site overhauled to keep the RRI program viable.
Future

• The TVA Board continues to make water quality below our dams a priority.

• There is an ongoing commitment to the cost of operations and the level of effort required to maintain the RRI program.

• TVA spends approximately $2.2M a year to operate and maintain the RRI program.

• The pro-active business decision to continue to look for ways of improving the RRI program’s efficiencies shows the TVA commitment to the welfare of the water quality below the dams in the Tennessee Valley.
Questions?
Communication Platform

• Planning based on business needs and TVA Mission

• Proactive vs. reactive communications

• Develop strategies, new tactics, improved use of communication vehicles
Boone Dam Communications Overview
Proactive public communication since sinkhole and seepage discovery in 2014
November 12, 2014
Boone Lake to be lowered below winter pool; Media/Stakeholder briefings

November 24, 2014
Water level to be held about 12 feet below normal

October 30, 2014
TVA Announces Early Drawdown
December 2015 – January 2016

“TVA’s response at Boone Dam is world class...”

-- Independent Review Board

Sluicing rumors...
- February 26, 2015-Carnegie Hotel, Johnson City, Tenn.
- March 10, 2015-Daniel Boone High School, Gray, Tenn.
- July 30, 2015-Millennium Centre, Johnson City, Tenn.
- November 5, 2015-Draft EA Public Comment Session, Daniel Boone High School
Communications Objectives for Natural Resources

• Strengthen TVA’s reputation as an environmental steward and valuable partner

• Build awareness internally and externally about the value of the region’s natural, cultural and recreational resources and promote engagement in protection and enhancement activities.

• Focus communications efforts, when appropriate, to align with agency focus areas
Proactive Communication

TVA to conduct aquatic health surveys

TVA biologists are conducting a fall aquatic survey to assess the overall health of fish and other aquatic life on four TVA reservoirs in Alabama, Tennessee, and Kentucky.

Using boat-mounted electro-fishing equipment to harmlessly stun and surface the fish for a brief time, TVA biologists will collect, weigh, measure and count the fish before releasing them back into the water. Crews also will collect and observe benthic macro-invertebrates, which are small, bottom-dwelling animals that live in or near the water.

Tennessee Valley Authority added 4 new photos.
November 16 at 10:55am

Fisheries biologists conducted their final fall public aquatic survey for 2015 on Cherokee Lake last week, checking the health of the fish. We regularly monitors fish and other aquatic life in various lakes across the Tennessee Valley and invites local anglers and the public to participate. The fish are collected using boat-mounted, electro-fishing equipment. The units harmlessly stun the fish for a brief time and bring them to the surface, where they are examined and evaluated by biologists. Bottom-dwelling organisms are also sampled to help measure overall reservoir health.
Social/Digital Media

Facebook – facebook.com/TVA
Twitter - @TVAnews
Instagram - @TVA
LinkedIn – linkedin.com/companies/TVA
YouTube – youtube.com/tvaneWSvideo

@BooneRepair
@TVAed
@TVAGPS
facebook.com/TVAGreenPowerSwitch
“With a strategy integrating owned media and social media, a brand’s own content can readily be found, consumed and shared by online audiences, creating the type of credibility associated with earned media and triggering additional visibility across social networks and search engines as a result.”

- Modern PR: the art & science of integrated media influence  PR Newswire
Case Study: Christmas 2015

A rain-deluged Tennessee Valley turned to TVA for critical information.
## Case Study: By the Numbers

<table>
<thead>
<tr>
<th>Facebook</th>
<th>Twitter</th>
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<tbody>
<tr>
<td>31 posts</td>
<td>89 Tweets</td>
</tr>
<tr>
<td>Total Reach: 3.5 million</td>
<td>Total Impressions: 199,525</td>
</tr>
<tr>
<td>Page Likes increased by 7,230 (Over 52,000 total)</td>
<td>Engagement: 8,731 (likes, retweets, etc.)</td>
</tr>
<tr>
<td>Engagement: 295,000 (likes, comments shares, etc.)</td>
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</tr>
<tr>
<td>Total Impressions: 6.3 million (number of impressions seen of any content associated with Page.)</td>
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</tr>
<tr>
<td>Total Video Views: 676,810</td>
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<tr>
<td>Total Shares for Dec.: 64,010 (The number of people sharing stories about your page)</td>
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<tr>
<th>LinkedIn</th>
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<tr>
<td>27 posts</td>
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<tr>
<td>Total Impressions: 437,828</td>
</tr>
<tr>
<td>Engagement: 6,134</td>
</tr>
</tbody>
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Engaging Content

Reach: 750,000

Reach: 62,000

Reach: 99,000

Reach: 226,000

Reach: 30,000
Get ready for some #TVAfun
Get ready for some #TVAfun
Questions?
Wrap Up and Adjourn
Thank you and please travel safely!