

# Rights-of-Way

## Sustain Program

### Asset Management Strategy

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## **Executive Summary for Updated Strategy**

What equipment and facilities are covered?

What performance objectives, measures and targets should be set?

What is the health of the assets?

What risks must be managed?

What strategies should we undertake?

What will it cost?

Program Accomplishments FY10-11

# Executive Summary for Update

- Rights of Way (ROWs) Asset Management Strategy
  - Covers corridors that contain transmission lines and the access roads established for the maintenance of transmission lines.
  - Covers access roads to substations and microwave stations.
  
- Assets included in 266,600 acres of BPA maintained ROW corridors
  - 295 corridors, 423 transmission lines, 289 substations, and 368 communication sites.
  - 19,146 miles of access roads, including roads, bridges, culverts, trails and gates.
  - ~ 80,000 tracts of easement for the corridors and access roads.
  
- Three components are included in the Strategy that enable BPA to safely access, construct, operate and maintain its transmission facilities.
  - Control Vegetation.
  - Maintain and improve access roads.
  - Acquire and manage land rights.

## Executive Summary (Cont.)

- Control Vegetation – This program was developed to ensure regulatory compliance with FERC, NERC, and WECC guidelines for managing vegetation and to avoid costly fines resulting from unplanned outages.
- The vegetation management strategy involves an ongoing effort to clear and maintain land within transmission corridors through the implementation of integrated vegetation management (IVM) practices. The objective is to ensure that vegetation growth does not impede access to towers and potential of trees does not present the risk of arcing from energized lines

## Executive Summary (Cont.)

- Access Roads (AR) – This program was developed to support:
  - Wood Pole Lines Strategy
  - Sustain Steel Lines Strategy
  - AR ‘stand alone’ upgrades to meet regulatory and environmental compliance
- The primary strategy for AR is to complete all necessary construction work prior to line work associated with wood poles and steel lines as well as to move from a reactive to a systematic approach to AR project identification. This strategy is a critical component of the sustain programs because it ensures that safe access in compliance with environmental regulations is provided throughout the entire transmission system.

## Executive Summary (Cont.)

- Acquire and Manage Land Rights (LR) – This program was developed to support:
  - Wood Pole Lines Strategy
  - Sustain Steel Lines Strategy
  - AR ‘stand alone’ upgrades to meet regulatory and environmental compliance
  - Tribal renewals
  - Orchard buy back program
- The primary strategy for LR is to complete all necessary land acquisition work a year in advance of AR construction associated with wood poles and steel lines as well as stand alone projects. This strategy is a critical component of the sustain programs because it ensures that legal access is provided throughout the entire transmission system.
- The Orchard buy back program keeps our rights-of-way clear of vegetation and WECC/NERC compliant.

# Executive Summary (Cont.)

## Capital Planning Summary

Node 5193 - Access Roads		FY 12 OY	FY 13	FY 14	FY 15	Total
	ROW - Access Roads for Sustain	\$12,152	\$10,983	\$9,589	\$9,093	\$41,817
	Access Roads Env. Support	\$1,356	\$1,723	\$1,527	\$1,807	\$6,413
	ROW - Access Roads	\$2,188	\$1,762	\$2,974	\$2,226	\$9,150
	Env. Upgrades	\$244	\$277	\$473	\$443	\$1,437

**Sub-total Access Roads**                      **\$15,940**    **\$14,745**    **\$14,563**    **\$13,569**    **\$58,817**

Land Rights		FY 12 OY	FY 13	FY 14	FY 15	Total
Node 5671	Land Rights -Tribal Renewals	\$971	\$3,800	\$3,900	\$5,100	\$13,771
Node 5672	Land Rights - Veg Mitigation	\$1,004	\$500	\$500	\$500	\$2,504
Node 5673	Land Rights - Access Roads	\$6,880	\$1,500	\$3,000	\$3,000	\$14,380

**Sub-total Land Rights**                      **\$8,855**    **\$5,800**    **\$7,400**    **\$8,600**    **\$30,655**

**ROW Capital Total**                      **\$24,795**    **\$20,545**    **\$21,963**    **\$22,169**    **\$89,472**

# Executive Summary (Cont.)

## ■ Lessons Learned

- Wood Pole and Steel Line Sustain Programs had approved Business Cases prior to the ROW Business Case approval. This created a challenge in implementing the strategy to ‘get ahead’ of the Sustain Programs by acquiring land rights and upgrading the Access Roads a year in advance of other programs’ project work.
- We didn’t adequately address the amount of time it will take to ramp up the ROW Program to accommodate the higher level of funding identified in the Business Case.

## ■ Next Steps

- Develop even closer coordination with Wood Pole and Steel Line Sustain Programs by way of monthly or quarterly program updates to ensure that schedules are getting more closely synchronized.
- Develop more effective strategies for scoping and estimating projects that will allow for accelerated project development.



Executive Summary for Updated Strategy

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Program Accomplishments FY10-11

# What this strategy covers

**Rights of Way (ROWs) are comprised of corridors that contain transmission lines and the access roads established for the maintenance of transmission lines. Additional elements that are covered are: access roads to substations and microwave stations.**

**Working with federal, state, and local agencies, private land owners, and other interested parties, BPA maintains 266,600 acres of transmission line corridor rights of way, encompassing:**

- 295 corridors, 423 transmission lines, 289 substations, and 368 communication sites
- 19,146 miles of access roads, including roads, bridges, culverts, trails and gates
- ~80,000 tracts of easement for the corridors and access roads

*This strategy **covers** maintenance work to control vegetation: maintenance work and improvements to roads; and acquisitions and perfecting of easement rights to enable BPA to access and manage **existing** transmission facilities*

*This strategy **does not cover** the clearing of vegetation, building of roads, or acquiring of land or easement rights to support construction of new lines and facilities. These activities are instead covered by **individual expansion-related** projects*

# What this strategy covers

## Three program components

*To enable BPA to safely access, construct, operate and maintain its transmission facilities*

### 1. Control vegetation

- BPA inspects and observes vegetation on all 266,600 acres of transmission line corridors
- Approximately 52 percent (144,500 acres) require cyclical vegetation control while 48 percent (122,100) do not because they are managed for agricultural purposes
- Vegetation is also managed at the substation and communication sites

### 2. Maintain and improve access roads

- Access roads service the corridors, substations, and communication sites

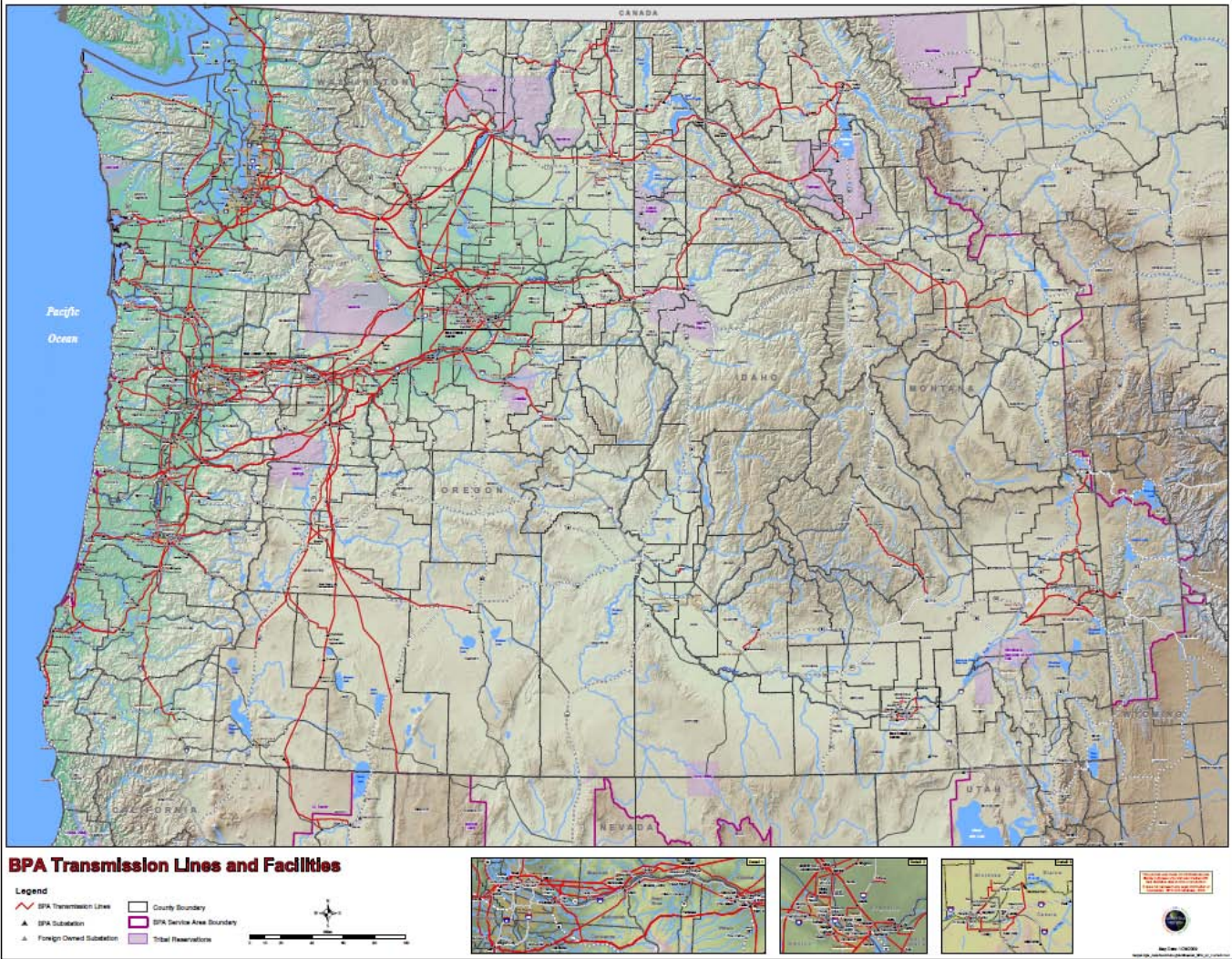
### 3. Acquire and manage land rights

- Types of rights include perpetual easements (vegetation, access), term easements (vegetation, access), fee properties, special use permits, and revocable permits
- 30% (80,761) of Transmission ROW acres have vegetation agreements (comprised of 22% agriculture; 53% landscaping; 17% tree orchards and Christmas trees; 8% individual tree agreements)
- The annual number of land management cases is up to 3,030 of which approximately 570 are closed annually

# Situation Assessment

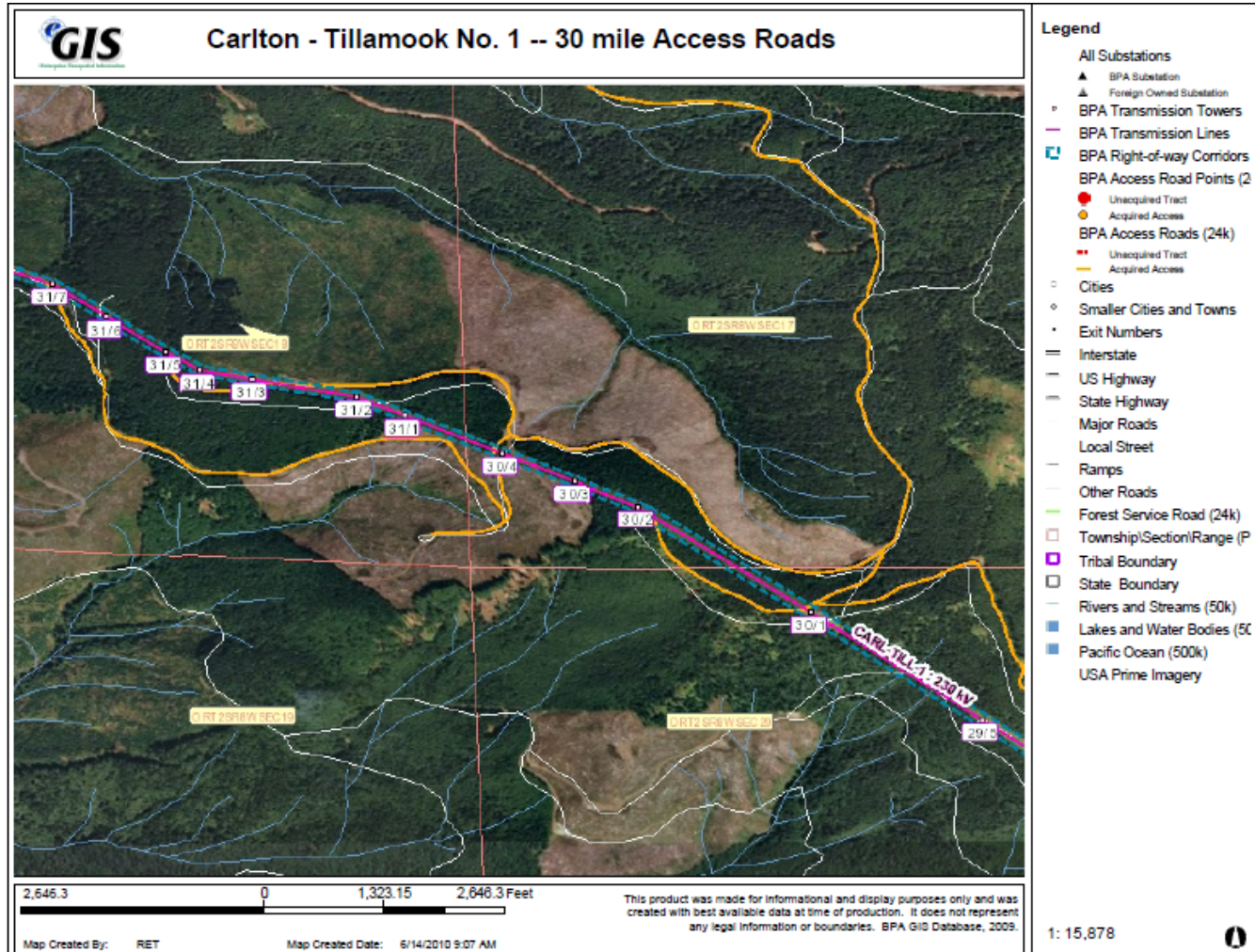
- Historically, the agency approach to ROW management has been to react to events rather than apply a proactive, planned life-cycle cost and risk proactive approach.
- Costs to maintain the ROW are primarily expense activities focused on vegetation clearing and maintaining existing access roads.
- The 2008 vegetation-caused line outage resulted in remedial work costing over \$20 million.
- Access roads have had minimal budgets that do not allow for adequate maintenance and improvements. Historically, some but not all emergency repairs are able to be completed at critical locations.
- Encroachments are an ongoing issue that have been managed on a reactive basis.
- The Access Road Maintenance System (ARMS) data indicates that formal easements are lacking in many locations, these will need to be reviewed to determine which need to be acquired.
- Environmental mitigation has been required to address impacts that could have been avoided with design adjustments to ROW management activities (i.e., changes in vegetation management prescriptions). The often urgent, reactive nature of ROW activities these past 2-3 years has left little planning time.
- A more strategic, centrally coordinated approach to managing ROW corridors is needed to support data-driven and risk-informed decision-making.

# Transmission Corridors

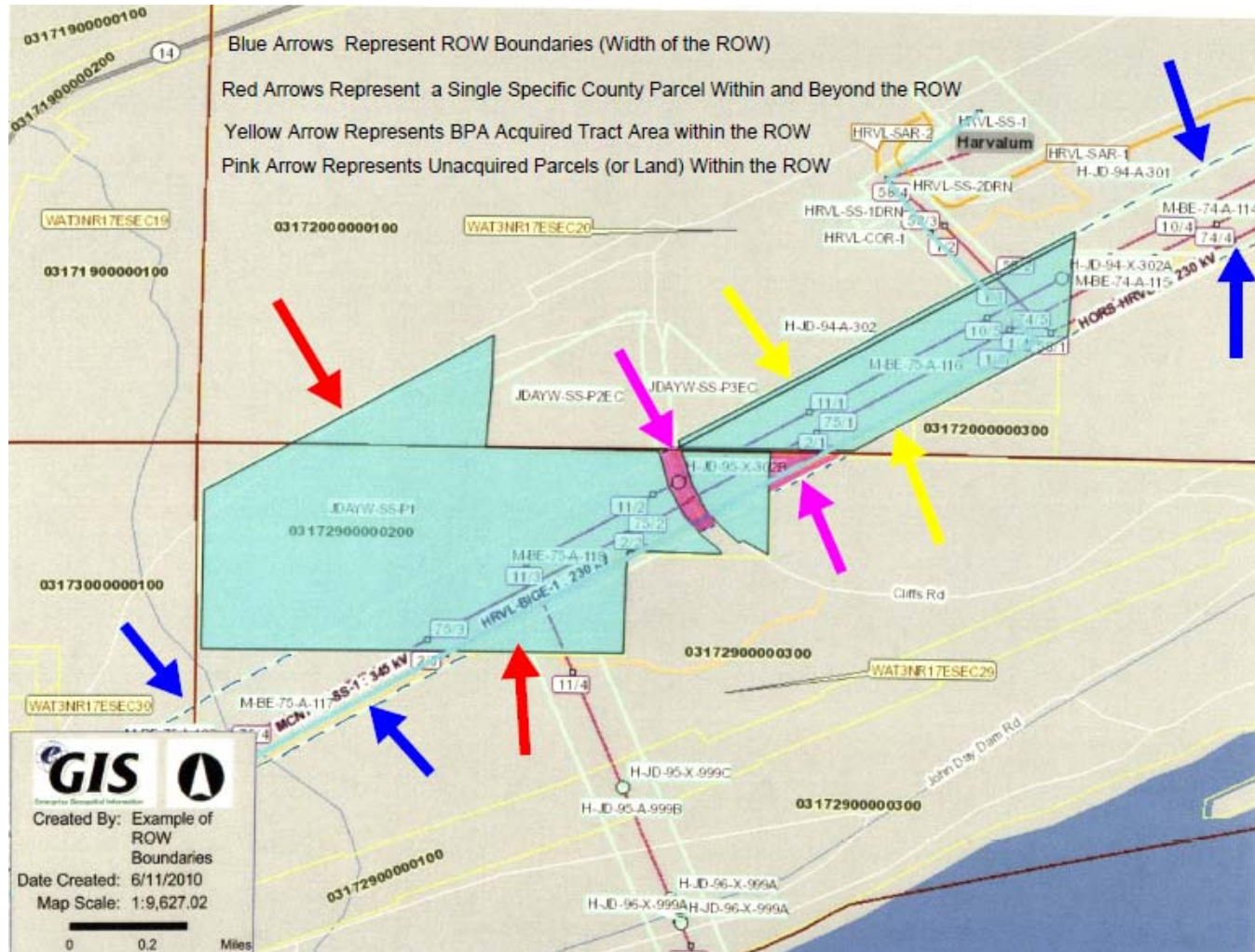




# Sample Access Road



# Sample Easements Parcel Map



# Glossary of Terms

- **Encroachments:** Activities, uses, or vegetation on the rights-of-way (ROW) that intrude, invade or interfere, now or in the future, with BPA's ability to safely access, construct, operate or maintain its facilities
- **Rights-of-Way (ROW):** Strips of land that have rights granted, through an easement or other mechanism, for purposes such as a electric transmission line, highways, railroad, gas line, etc.
- **Easement:** An interest in land owned by another that entitles its holder to a specific limited use or enjoyment .
- **ARMS:** The Access Road Maintenance System is a GIS database that identifies roads that BPA staff uses to access BPA's facilities. This database includes roads with land rights and roads without land rights (i.e.. verbal permission only).
- **Danger Brush:** Any vegetation located on the transmission line Right-of-Way (ROW), extending into the minimum clearance distance from the conductor as identified in Table 1 for Danger Brush.
- **High Brush:** Any vegetation located on the transmission line ROW extending into the minimum clearance distance from the conductor as identified in Table 1 for High Brush.
- **Forbs:** Herbaceous flowering plants that are not (grasses, sedges or rushes).



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Program Accomplishments FY10-11

# Performance Objectives and Targets

## Reliability objectives

*To enable BPA to access, construct, operate and maintain its transmission facilities*

### Frequency of unplanned outages (SAIFI-related)

**Performance objective: Maintain a safe clearance zone and a stable low-growing plant community**

**Measure 1 (Lagging):** Frequency of Line Outages caused by Vegetation Growth

**End-stage Target 1:** Zero grow into tree-related outages

**Current level of performance:** We are in compliance, with zero grow into tree-related outages since June, 2008

**Measure 2 (Leading): Reduce number of Danger Brush (DB), High Brush (HB) reports**

**End-stage Target 2:** TBD% reduction each year over the next (TBD) years in the number of DB & HB (target to be established in FY2012)

**Current level of performance:** In FY 2010, over 14,000 reports identified and corrected. In FY 2011, over 4,000 reports identified to be corrected. Start of FY 2012 plan: ~ 4,000 reports identified to be corrected.

**Measure 3: Comply with NERC/WECC requirements (FAC-003-01 Transmission Vegetation Management Program)**

**End-stage Target 3:** 100% compliance with FAC-003-01, no significant findings

**Current level of performance:** In full compliance

### Duration of unplanned outages (SAIDI-related)

**Performance objective: Provide safe and reliable road access to transmission assets**

**Measure 1 (Lagging):** Number of unplanned outages (Category 1 and 2 Lines) extended beyond 24 hours that are attributable to access road issues that have existing work requests

**End-stage Target 1:** Number to be determined by the end of Q2 FY2012, based on results of FY2011, extended outages caused by access road issues; excludes access issues resulting from major storm events (BPA needs to define "major storm events"); excludes structures where it is known there is no physical or legal access.

**Current level of performance:** Needs to be determined through a review of outage reports over 24 hours to determine extent of contribution of poor access roads to the duration of the outage

**Measure 2 (Leading):** Number of work requests received for road repairs related to isolated structures

**End-stage Target 2:** Two (2) or fewer work requests received per year by FY2015 related to isolated structures

**Current level of performance:** Currently over 89 work requests are pending resulting in a backlog of approximately \$4.5 mm in deferred maintenance.

**Measure 3 (Lagging):** Inability to access transmission facilities due to inadequate land rights.

**End-stage Target 1:** Develop plan to (1) identify the roads in the eGIS data base where land rights have not been acquired by December 2013; (2) the Access Road Team will identify and prioritize which roads need to be acquired, and which roads need to be eliminated from the eGIS data base by December 2014; (3) develop estimates for the cost to acquire the necessary land rights; (4) the Access Road Team will set a schedule based on the number of roads, and available funding to acquire the land rights for these access roads.

# Performance Objectives and Targets (cont'd)

**Availability objective** *(Frequency of planned outages requested by Natural Resource Staff to support Cycle maintenance activities)*

**Performance Objective:** Optimize availability of service from BPA's transmission lines by minimizing planned outages taken to cut/treat vegetation

**Measure:** Line availability percentage (includes planned outages only)

**End-stage Target:** (Need to review current data to establish target) Vegetation Management activities input to BPA's most important transmission lines (Category 1 and 2) are available for service at least 98.0 percent of the time

**Current level of performance:** 98% Target is currently met, however not tracked specifically for planned outages to support vegetation maintenance activities

**Environmental compliance objective** *(Compliance with Federal Regulations and Environmental Impact Statement)*

**Performance objective:** Maintain transmission corridors and access roads in accordance with KEP/Federal environmental standards and Final Environmental Impact Statement DOE/EIS-0285

**Measure:** Notices of violation (for example, EPA, Corps of Engineers, US Fish and Wildlife Services)

**End-Stage Target:** No notices of violation

**Current level of performance:** There is one outstanding Notice of Violation. BPA has completed an initial response (Green River Fill incident)

**Safety objective** *(Lost-time accidents and fatalities activities performed safely)*

**Performance Objective:** BPA transmission corridors and access roads are maintained and operated in a way that limits risk to health and safety of employees working on the lines

**Measures:** Frequency of lost-time accidents and near misses

**End-Stage Target:** Lost-time accident frequency rate  $\leq 1.5$  per 100,000 hours worked, no fatalities occur to BPA employees or contract employees working on BPA facilities

**Current Status:** 1 reported lost-time accidents for to date 10/05/10 TFEP Line Foreman 1 - while reaching over side of cart, employee slipped and a finger got pinched between spacer cart and conductor

# Performance Objectives and Targets (cont'd)

## Stakeholder/Land Owner and Land Management Objective

*(Compatible Uses of ROWs)*

**Performance Objective:** Ensure that rights-of-way are maintained so that all uses are safe and do not present an interference with BPA's activities:

- Developed a rating system to address the priority of mitigating encroachments in June 2011. Rate existing encroachments by June 2012 and mitigate accordingly
- Real Property Services will work with Public Affairs to develop an Outreach Program, including schedules and target audiences by March 2012, to educate the public on compatible use of BPA's rights-of-way
- Follow the Vegetation Mitigation Procedures for both short and long term mitigation of the 129 orchards that have been identified by the NRS's as incompatible with BPA's Vegetation Clearance Standards
- For vacant and underutilized rights-of-way, Real Property Services will work with the Supervisor for the Natural Resource Specialists and the Constituent Account Executives to develop a plan, including identification of specific right-of-way corridors and schedules, to survey and/or mark the edge of the rights-of-way

**Measure 1:** Number of the encroachments per rating

**End-stage Target 1:** 100% of the highest rated encroachments have action taken towards mitigation. Targets for lower priorities will be identified by June 2012

**Current level of performance:** Currently in the process of defining the ratings, then will be applied to the cases

# Performance Objectives and Targets (cont'd)

## Stakeholder/Land Owner and Land Management Objective

*(Compatible Uses of ROWs)*

**Measure 2:** Number of Outreach Programs scheduled

**End-stage Target 2:** 100% of Outreach Program schedules are met

**Current level of performance:** 7 events completed in FY 2011. 7 events are scheduled for FY 2012

**Measure 3:** Number of Land Management Cases, for Orchards, closed

**End-stage Target 3:** Within 5 years of **9/30/2010**, half of the 129 orchards reported as incompatible with BPA's Vegetation Clearance Standards will have long term mitigation completed, and all will be mitigated within 10 years; any new orchards reported after **9/30/2010** will be mitigated within 2 years

**Current level of performance:** All DB Orchard locations inspected and trimmed while long term solutions are negotiated, FY2010 – Removed 28 DB orchard locations (4,446 trees) and closed 17 cases

**Measure 4:** Number of vacant and underutilized rights-of-way scheduled for survey and marking ROW edge

**End-stage Target 4:** 100% of plan for vacant and underutilized rights-of-way met

**Current level of performance:** 1 completed to date (Spokane – Hot Springs)

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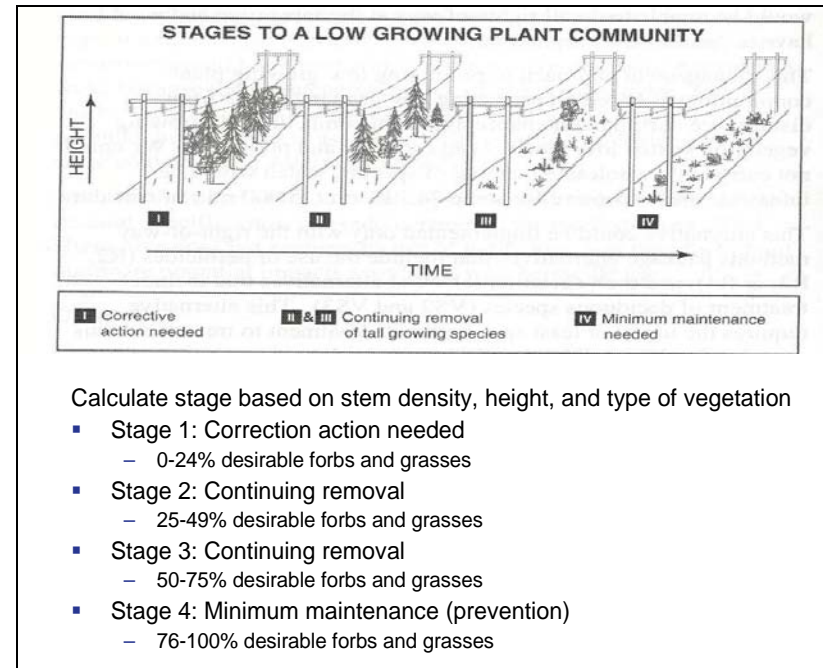
What strategies should we undertake?

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Program Accomplishments FY10-11

# Vegetation Management Condition Assessment

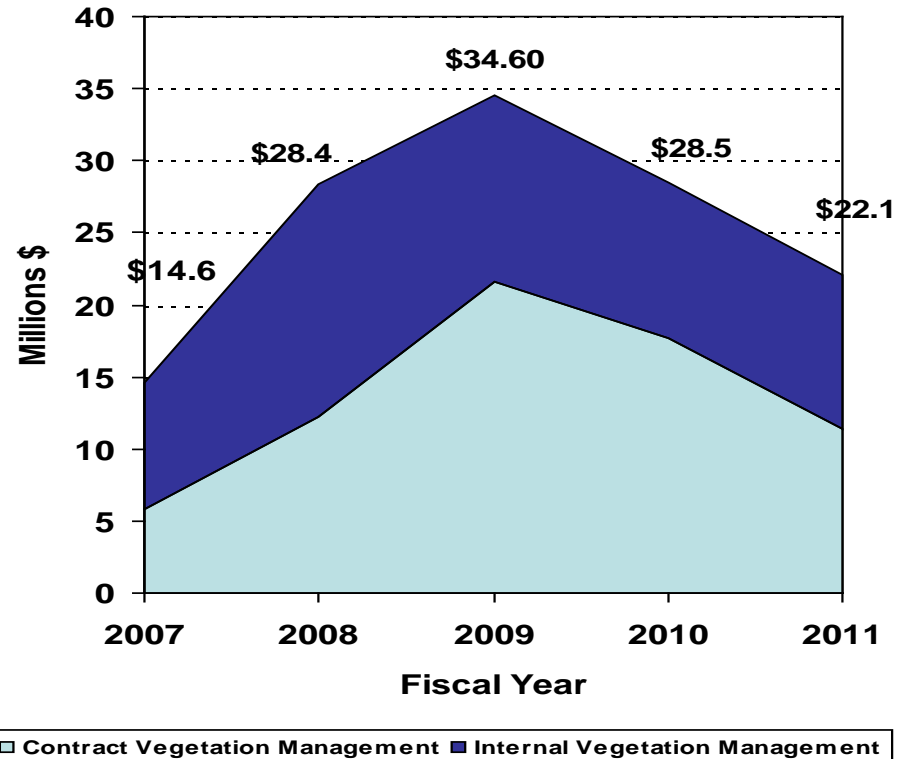
- 295 corridors
- Currently – On average, the breakdown of Low Growing Plant Community stages per corridor is:
  - 9% of the corridor is in Stage 1
  - 14% of the corridor is in Stage 2
  - 23% of the corridor is in Stage 3
  - 64% of the corridor is in Stage 4
- ~55% of the corridor acres require cyclical, preventive vegetation maintenance to ensure achievement of clearance standards
- Conditions are markedly improved. Three (3) years ago, the breakdown of Low Growing Plant Community stages per corridor was:
  - 20% of the corridor is in Stage 1
  - 40% of the corridor is in Stage 2
  - 20% of the corridor is in Stage 3
  - 20% of the corridor is in Stage 4



Assessment based on the experience and judgment  
of the Natural Resource Specialist (NRS)

# Historical Vegetation Management Expenses

- In response to a transmission line vegetation-related outage in 2008 and self report to WECC, expenses related to vegetation management have ramped up dramatically for remedial work
- Vegetation management funding levels for prior years were determined to be inadequate to keep up with annual vegetation growth within and along the rights-of-way
- Costs for service contracts are expected to continue to be higher during the transition from corridors with many danger brush and high brush reports to corridors cleared of brush issues and maintained with low growing plant communities



	2007	2008	2009	2010	2011
<b>Contract Vegetation Management</b>	\$5.9	\$12.2	\$21.6	\$17.7	\$11.4
<b>Internal Vegetation Management</b>	\$8.7	\$16.2	\$13.0	\$10.8	\$10.7
<b>Total Veg. Expense</b>	\$14.6	\$28.4	\$34.6	\$28.5	\$22.1



# Historical NERC/WECC Reportable Vegetation-Related Outages

## Vegetation Management Transmission Corridor System Performance

- Off-ROW\* fall-into caused outages are identified as Category 3 and are not sanctionable
- July 2007 grow into outage was on 500kV circuit
- June 2008 grow into outage was on 230kV circuit
- WECC response – issued a Remedial Action Directive (RAD) on July 3, 2008 ordering BPA to do a comprehensive inspection on all 8,500 corridor miles (approximately 15,000 circuit miles) within 90 days, costing roughly \$6.4 million
- Moving forward, goal is for zero On-ROW vegetation-related outages

	On ROW	Off ROW*
2011	0	6
2010	0	5
2009	0	6
2008	1	7
2007	1	80
2006	0	43

\*Off ROW vegetation related outages are sanctionable when there is grow-into contact  
2007 represents a high storm activity year  
(no sanctionable / grow-into Off ROW vegetation related outages recorded between 2006 and 2009)

# Planned Outage History for Vegetation Management

- Downward trend for planned outages and hold orders to support vegetation maintenance work
- Implies that the vegetation height and distance from the lines is more actively managed than in previous years
- Target is to reduce Planned Outages (percentage to be determined)
- 2010 Converted to DART system, data from January through March is not included

	# of Planned Outages (Work Clearances) taken for vegetation maintenance work	# of Hold Orders taken for cutting or removing trees and other vegetation
2011	30	16
2010	58*	44*
2009	105	70
2008	166	90
2007	200	110
2006	205	85

\*2010 Data from March to date

# Access Road Condition Assessment

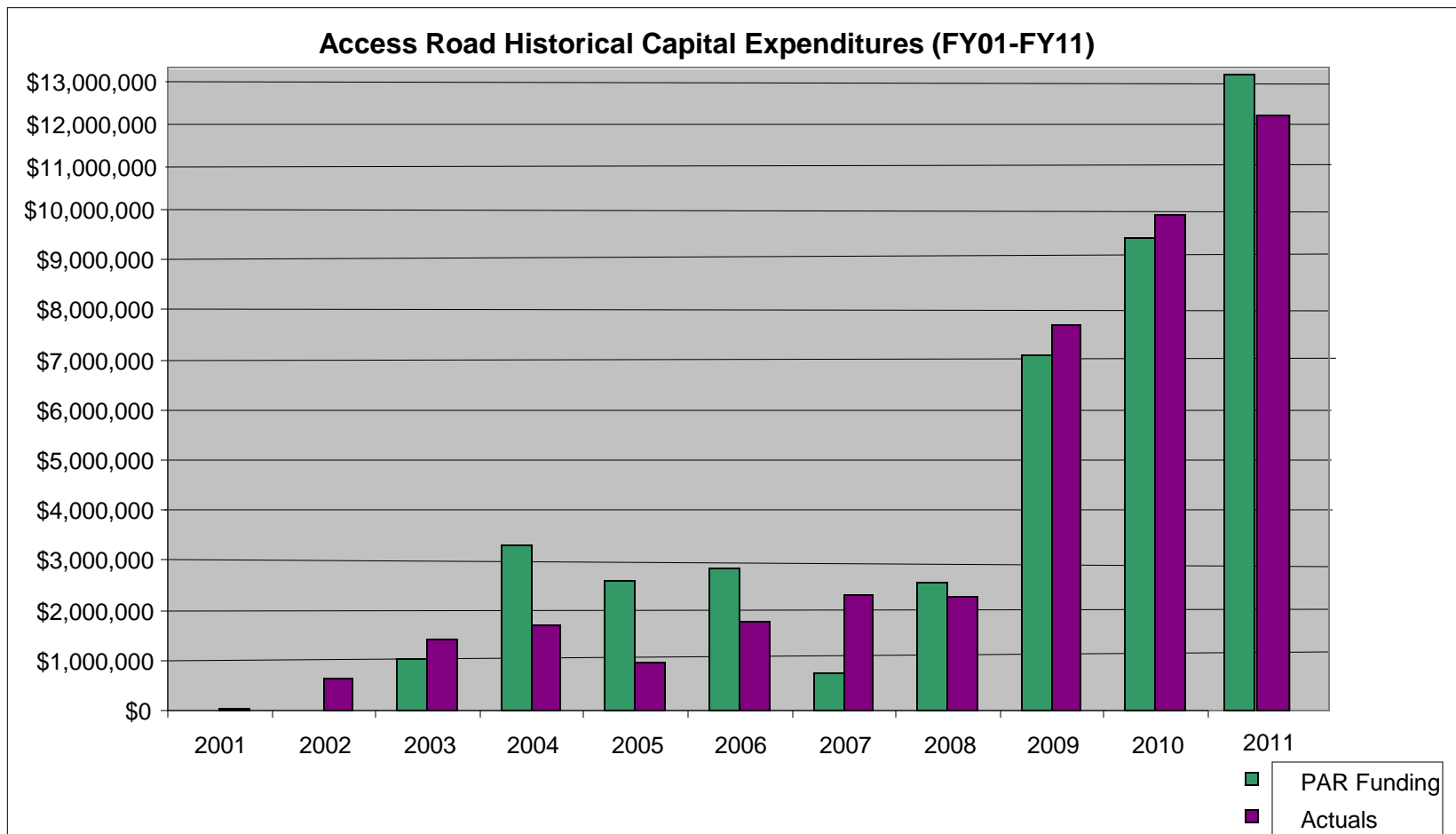
- Assets include road surface, culverts (9062), gates (17,459), bridges (334), and stream fords (1329)
- Condition information is captured during working patrols and line maintenance activities; the data is stored in ARMS (Access Road Management System). Conversion of these data to TAS/EGIS to be determined as part of the TAS project plan.
- Condition assessment information is reasonably complete. A comprehensive reassessment and update to the data is needed to support proactive planning.
- Condition varies greatly across our system depending on terrain, weather, public access, etc.:
  - Ninety percent of the roads are adequate for access to patrol transmission lines with light duty vehicles, *but* 50% of the access road system requires minor to major capital improvement to support the heavy equipment that may be needed for line repair, replacement, and other construction work
  - As of August 2010, 867 road segments had been identified with road failures rendering the road impassable. Because the ARMS program has been retired, no updated condition information is available other than reports from working patrols. This data is proposed to be migrated to eGIS in FY 2012.
- Access roads easement rights fall into two categories: formal, documented rights vs. informal, undocumented rights.
  - Undocumented rights present potential access issues
  - Unknown number of undocumented rights

# Access Roads Historical Expenses (FY05-FY11)

Millions \$	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>
Total Expense	<b>0.25</b>	<b>1.85</b>	<b>1.17</b>	<b>2.13</b>	<b>0.94</b>	<b>0.90</b>	<b>0.80</b>

- Maintenance of access roads has historically not been a priority because of competing, more urgent expense work needed on the ROWs. This has resulted in completion of only emergency repair work. Roads not selected for emergency repairs continue to deteriorate
- Expense activities include emergency repairs caused by slides, surface rocking, gate repairs, cleaning out, repairing and replacing culverts and working patrols documenting access road conditions
- Backlog of work is un-funded, and has been increasing at a rate of ~ \$400K per year since 2002
- Stable predictable funding level required ~ \$1.7M per year in 2011 \$'s

# Access Roads Historical Capital Expenditures (FY01-FY11)



- Sustain program approved July, 2008

# Land Management and Land Rights

- **ARMS:** The Access Road Management System mapped all roads used by BPA, including acquired roads and roads where use is by verbal agreement only and the data was migrated to eGIS in 2011. Resources need to be dedicated to preparing "Access Road Work Requests" for those roads with verbal agreements only, so that they can be reviewed to determine whether land rights should be acquired. Then the acquisitions need to be prioritized and scheduled for acquisition over a reasonable period.
  
- **Trends indicate that Land Management Cases (encroachments and land use applications) have increased in number by 48% over the last 4 years**
  - The increase of 48% is primarily attributable to land use applications. Landowners and developers recognize the benefit of potentially using the ROW to promote development on and off the ROW, especially where land availability is limited, and BPA's ongoing outreach programs may be successful in encouraging coordination with BPA prior to initiating any activities.
  - Adding supplemental labor support over the last couple of years has helped to increase the number of Land Management Cases closed per year
  - The backlog of cases continues to grow since staff cannot keep up with the increased workload
  
- **To date the Natural Resource Specialists have identified 129 orchards that are not in compliance with BPA's vegetation clearance standards.**
  - Adding resources for a 5 year period will increase the number of orchards mitigated and reduce the backlog. If the vegetation is regularly cleared in BPA's rights-of-ways, then the number of new non-compliance orchards is expected to be limited. The Vegetation Mitigation Process will result in a Mitigation Action Plan which could result in:
    1. Entering into a new Vegetation Agreement or modifying an existing Vegetation Agreement (reducing height and/or changing species), and the Land Management Case would remain active
    2. Raising towers, and entering into a new Vegetation Agreement or modifying an existing Agreement, and the Land Management case would remain active
    3. BPA purchasing the right to control vegetation within the rights-of-way and removing the vegetation, or any combination of the three actions, and the Land Management Case would be closed.

# Land Management and Land Rights

- BPA has promoted collaborative relationships and trustworthy stewardship with landowners. Statistics show that the percentage of parcels condemned have decreased over time. BPA strives to use condemnation as a last resort, and to ensure that all reasonable efforts have been made towards successful negotiations between the parties.

<b>Time</b>	<b>Regular Acquisitions</b>	<b>Condemnations</b>	<b>Total Parcels</b>	<b>% Condemnations</b>
<b>1937-1962</b>	89,074	9,962	99,036	10.06%
<b>1963-1988</b>	25,377	2,225	27,602	8.06%
<b>1989-current</b>	3,170	49	3,219	1.52%
<b>TOTAL</b>	117,621	12,236	129,857	9.42%

# Land Management and Land Rights Historical Expenses (FY05-FY11)

## *Realty Support Services for ROW - Actuals 2005 through 2011*

(Millions \$)	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>
<b>Real Property Services</b>	<b>0.17</b>	<b>0.21</b>	<b>0.12</b>	<b>0.29</b>	<b>1.44</b>	<b>0.16</b>	<b>0.38</b>
<b>Real Property Support Services</b>	<b>0.00</b>	<b>0.00</b>	<b>0.99</b>	<b>1.26</b>	<b>1.28</b>	<b>0.76</b>	<b>0.11</b>
<b>Geospatial Services</b>	<b>0.31</b>	<b>0.34</b>	<b>1.54</b>	<b>1.98</b>	<b>2.22</b>	<b>1.77</b>	<b>3.18</b>
<b>Real Property Field Services</b>	<b>1.38</b>	<b>1.61</b>	<b>1.35</b>	<b>1.85</b>	<b>2.50</b>	<b>1.25</b>	<b>1.95</b>
<b>Survey and Mapping</b>	<b>1.45</b>	<b>1.68</b>	<b>0.81</b>	<b>1.49</b>	<b>1.42</b>	<b>0.53</b>	<b>0.82</b>
<b>Total</b>	<b>3.30</b>	<b>3.85</b>	<b>4.81</b>	<b>6.87</b>	<b>8.86</b>	<b>4.46</b>	<b>6.44</b>

1. Source: Kathy Hunter



# Summary of Historical Capital Spend

Node		2006	2007	2008	2009	2010	2011	TOTAL
0005671 - LR Tribal Renewals	Funding	\$ 54,762	\$ 144,729	\$ 380,374	\$ 14,420,219	\$ 18,676,788	\$ 2,263,083	\$ 35,939,955
	Actuals	\$ 217,399	\$ 144,729	\$ 380,373	\$ 14,420,219	\$ 18,677,220	\$ 1,577,025	\$ 35,416,965
0005672 - LR Veg Mitigation	Funding					\$ 233,927	\$ 1,156,073	\$ 1,390,000
	Actuals					\$ 227,586	\$ 1,027,470	\$ 1,255,056
0005673 - LR Access Roads	Funding	\$ 154,784	\$ 77,013	\$ 102,879	\$ 106,367	\$ 760,066	\$ 3,540,002	\$ 4,741,111
	Actuals	\$ 154,784	\$ 77,013	\$ 102,879	\$ 106,367	\$ 760,036	\$ 2,958,037	\$ 4,159,116
0005193 - Access Roads	Funding	\$ 2,792,672	\$ 761,557	\$ 2,553,618	\$ 7,080,388	\$ 9,283,096	\$ 13,093,521	\$ 35,564,852
	Actuals	\$ 1,778,206	\$ 2,312,305	\$ 2,249,217	\$ 7,679,355	\$ 9,872,674	\$ 12,113,916	\$ 36,005,673
FY Total	Funding	\$ 3,002,218	\$ 983,299	\$ 3,036,871	\$ 21,606,974	\$ 28,953,877	\$ 20,052,679	
FY Total	Actuals	\$ 1,995,605	\$ 2,534,047	\$ 2,732,469	\$ 22,205,941	\$ 29,537,516	\$ 17,676,448	

Note: 2006 – 2009 dollars are not shown for 0005672 because there was not a program under the existing tree structure for those years. Land rights in support of vegetation mitigation were funded out of nodes 1060 and 1061 in the old tree structure and charges are lumped together with other project costs.

Executive Summary for Updated Strategy

What equipment and facilities are covered?

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Program Accomplishments FY10-11

# Risk Assessment and Analysis

## ■ Reliability Risks

- Vegetation Program does not comply with FAC-003-1 Standard
  - Likelihood = Unlikely: Recently implemented process control and quality assurance, revisions to patrol and clearance standards, and increase in vegetation data
  - Consequence = Major: WECC sanctionable violation
  
- Danger Tree Grow-into (DTG) are present in one or more corridors
  - Likelihood = Unlikely: Recently implemented process control and quality assurance, revisions to patrol and clearance standards, and increase in vegetation data
  - Consequence = Major: WECC sanctionable violation
  
- Unplanned transmission line outage due to vegetation in or on the edge of the corridor falling into a line
  - Likelihood = Low: Minor amount of corridor acreage that is not being actively managed for fall into situations; likelihood changes to unlikely if FAC-003-2 is implemented (clarifies “actively maintained rights-of-way”)
  - Consequence = Major: WECC sanctionable violation and subsequent mitigation (~\$12MM, or more)

# Risk Assessment and Analysis

## Reliability Risks (continued)

- Insufficient resources to complete all necessary vegetation corrections and planned maintenance
  - Likelihood = Unlikely: On Rights-of-Way vegetation management activities are a high priority to fund and staff
  - Consequence = Major: Violation of TVMP (Transmission Vegetation Management Plan), WECC violation, possible outage, possible accrual of deferred maintenance, potential safety hazard to the public and BPA staff
  
- Cannot access most important transmission lines (Category 1 and 2) and structures that have roads leading to them – due to physical conditions of the roads
  - Likelihood = Certain: Will happen ~ every other year depending on storm conditions and intensity
  - Consequence = Ranges: From no consequences to reliability, to longer duration of outage (if outage occurs)
  
- Cannot access most important transmission lines (Category 1 and 2) and structures that have roads leading to them
  - Land rights issues (land rights not acquired for access road, handshake agreement revoked by land owner)
    - Likelihood = Unlikely
    - Consequence = Minor: For short term emergencies will use unsecured land rights; long-term would condemn; standard construction – may prolong schedule
  - Culvert failure
    - Likelihood = Certain: ~6 reported failures every year (road washout or road is impassible)
    - Consequence = Moderate: Environmental issues such as siltation of stream
  - Bridge failure
    - Likelihood: Certain – 3-4 Issues every year (bridge no longer meets load carrying standard)
    - Consequence = Ranges: Inability to access the rights-of-way, may delay maintenance work projects and/or responding to outages

# Risk Assessment and Analysis

## Availability Risks

- Ineffective planning and / or limited funding to maintain vegetation clearance standards requires additional planned outages.
  - Likelihood = High: Some level of Vegetation outages are necessary to perform certain cyclical maintenance activities
  - Consequence = Low: ~ 105-205 planned outages for vegetation management activities have been required in a normal year, has not impacted the Agency availability target

## Environmental Compliance Risks

- Vegetation management work does not comply with KEP/environmental standards: FEIS (Final Environmental Impact Statement – DOE/EIS - 0285)
  - Likelihood: Low (scheduled maintenance activities) – environmental evaluations are completed for all maintenance projects and the prescriptive maintenance can be adjusted to minimize impact, Medium (corrective maintenance) – need to react quickly may limit mitigation options
  - Consequence = Moderate: remedial mitigation after the fact, notice of violation, out of compliance with vegetation EIS, spread of noxious weeds along and outside of corridors

## Safety Risks

- Vegetation Management, Access Roads, or Realty BPA staff, contractor, or public injury or fatality
  - Likelihood: Rare - may be caused by inadequate safety training, weather/natural disaster, lack of proper checks and balances, or unqualified workers
  - Consequences: Significant consequence – injury or loss of human life, possible fire

# Risk Map – Current State (FY 2012)

**A corridor assessment must be completed on the 295 corridors in order to complete a comprehensive risk assessment and risk map**

- Currently there is no comprehensive data set

## **Dependencies:**

- Implementation of Vegetation Management system that stores corridor profile and health data
  - COTS (commercial off the shelf) or in-house solution
  - Will require capturing corridor health data through patrols and LiDAR
- Easement data resides in LIS (Land Information System) and Application Extender  
Tract ID can be associated with a corridor

Executive Summary for Updated Strategy

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Program Accomplishments FY10-11

# Alternative Strategies – Vegetation Management

- **Reactionary** - Program focused on only “Hot Spot” work. Trees are pruned just in time to prevent outages or damage to hardware. Multiple locations in various geographic areas are mitigated as identified, with little or no pre-planning (not cycle based management). Spikes and valleys in budget applied to maintain vegetation.
  - **Pros:** Requires limited staff, with minimal skills in utility arboriculture; no planning required; flexibility in budgeting
  - **Cons:** Highest cost, and highest risk; unknown scope; does not support demand planning; inefficient; not in alignment with FAC-003-1
- **Budget-driven** (pre-2008 BPA method) – Determine planned maintenance work based on set/restricted budget (~\$5-6MM budget for BPA vegetation management Pre-2008).
  - **Pros:** Short term cost savings annually; defined staffing level; lowest annual cost program
  - **Cons:** Higher outage risk due deferring work; escalated future costs due to deferring work (trees continue to grow and will cost more to remove); higher over-all program life cycle-costs; requires the balance of volume and quality of work (complete 10 miles of line to x clearance vs. complete 20 miles of line to less than x clearance); risk of non-compliance with FAC-003-1
- **Cycle-based** – Schedule driven strategy based on historic maintenance activities, predominantly planned corrective maintenance.
  - **Pros:** Lower long-range planning effort; predictable schedule; aligned with FAC-003-1; reduced outage risk
  - **Cons:** Higher staffing requirements; maintenance based on schedule not the actual conditions in the field; inefficient utilization of budgeted dollars; scope driven program independent of cost
- **IVM** - IVM (Integrated Vegetation Management) is a system of managing plant communities whereby managers set objectives, identify compatible and incompatible vegetation, consider action thresholds, and evaluate, select and implement the most appropriate control method or methods to achieve set objectives. The choice of control method or methods should be based on the environmental impact and anticipated effectiveness along with site characteristics, security, economics, current land use and other factors.
  - **Pros:** Maximum efficiency in utilization of resources and budget dollars; lowest risk; costs based on desired results; supports demand planning; industry best management practice ANSI A300 (part 7); supports compliance with FAC-003-1
  - **Cons:** Highest level of planning required; requires more advanced tools (data management and tracking tools); requires higher skill level employees (Utility Arboriculture knowledge)



Approved



# Components of IVM System

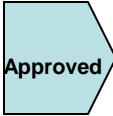
- Understanding the pest and ecosystem dynamics
- Setting management objectives and tolerance levels
- Compiling treatment options
- Accounting for economic and ecological effects of treatments
- Site – specific implementation of treatments
- Adaptive management and monitoring

# IVM Implementation Outline

- Create IT project (Vegetation Management System) Currently seeking CA funding to proceed
- Define Business requirements (completed 08/15/10)
- Examine off the shelf software
- Define the changes in business practices
- Identify the skills required to implement
- Obtain approvals

# Alternative Strategies – Access Roads

- **Reactionary** - Focus road work on most critical failures and core of upgrades and additions program (wood poles, steel structures, fiber) as requested; support the capital expansion program with outside funds; respond proactively to storm damage failures using contract road crews
  - **Pros:** Lowest short term cost strategy; BPA would have internal resources in Realty and Environmental to support these efforts
  - **Cons:** Emphasizes wood pole lines, not steel line corridors; maintenance dollars would be used to repair short sections of the steel lines; more prioritization required/ shifting of priorities as needs are identified; workload is less predictable; road upgrades would be to a lower standard in order to save on short term costs
- **Proactive Asset Renewal** – Includes the reactionary coupled with a more long-term, planned approach in upgrading and maintaining access road systems to support the lines and ROW vegetation management work
  - **Pros:** Projects can be bundled and assigned to the Owner Engineer; will improve corridor accessibility; will upgrade blocks of Rights-of-Way from non-accessible to accessible; reduce access risks by putting easements in place; eliminate fish blockages to reduce sedimentation in nearby streams and rivers
  - **Cons:** Competition for same resources (environmental, real property, survey); may agitate property owners; may increase access risks in areas where informal easements are in place
- **Aggressive Asset Renewal and Maintenance Strategy** – Includes the proactive asset renewal plus expands capital and expense programs; develop a road management component to identify issues and develop long term prioritization of access road needs; increase internal resources and utilize contract services to rebuild roads in major corridors at an accelerated pace
  - **Pros:** Non-accessibility issues would be fully mitigated; structures such as bridges would be repaired and maintained; steel line corridors would be repaired at the same or greater rate than wood pole lines
  - **Cons:** Highest cost; increased complexity due to higher number of projects to manage and higher level of planning required; average cost to design and construct projects would increase (assuming work is largely contracted out); would require additional BPA FTE (2-3 access road engineers) and a contracting officer)

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# Alternative Strategies – Realty Support for Access Roads, Vegetation Management, Line Work, and Encroachments

- **Reactionary** – Manage the requests from the Access Road Group, NRSs, Project Managers, Foremen; immediate response based upon priority (safety, landowner complaints, etc.)
  - **Pros:** Responds to immediate needs
  - **Cons:** Difficult to plan workload, uncertainty about budget, backlog of cases increasing
  
- **Proactive:** Develop a long-term plan to meet program objectives / targets, which includes reducing backlogs. Use long-term asset plans from access roads, vegetation, and poles/lines to define workload for upcoming years. Prioritize needs for rights (alternative routes, risk of complaints/litigation/trespass violations, criticality of the line, tribal renewals).
  - **Pros:** Know where all of the issues are across the system – comprehensive view; supports long term work and budget planning
  - **Cons:** Cost and resource intensive



# Integrated ROW Strategy - Linking the Strategies

- Synchronized planning and scheduling of ROW work schedules with long-range plans for tribal renewals, line projects, vegetation management cycles, and access roads projects
- Strategy components
  - Vegetation Management – Integrated Vegetation Management
  - Access Roads – Proactive Asset Renewal
  - Realty – Proactive
    - Support IVM strategy for vegetation management and proactive strategy for Access Roads
- Organizational restructuring should be considered to ensure alignment, integration, and efficiency in managing rights of way
- Software solutions are required to manage data
- Budgets need to be aligned with proposed strategies

Executive Summary for Updated Strategy

What equipment and facilities are covered?

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What risks must be managed?

What strategies should we undertake?

**What will it cost?**

Program Accomplishments FY10-11

# What Will It Cost?

- Increase the VM program to integrate new data management tool
- Move Access Roads program from emergency repairs to programmatic scheduled maintenance
- Increase the Realty expense to accelerate the resolution of existing non-compliant orchards and tree agreements
  - Negotiation costs BFTE
  - Costs Associated with buying back rights
- Resource constraints on Lands based on the acceleration of line rebuild projects impacts routine work
- Increased pressure from WA Department of Natural Resources to subsidize maintenance costs (to State standards) on BPA use of roads on WA state lands (595 miles)

# Expense Cost Estimates for Recommended Strategies

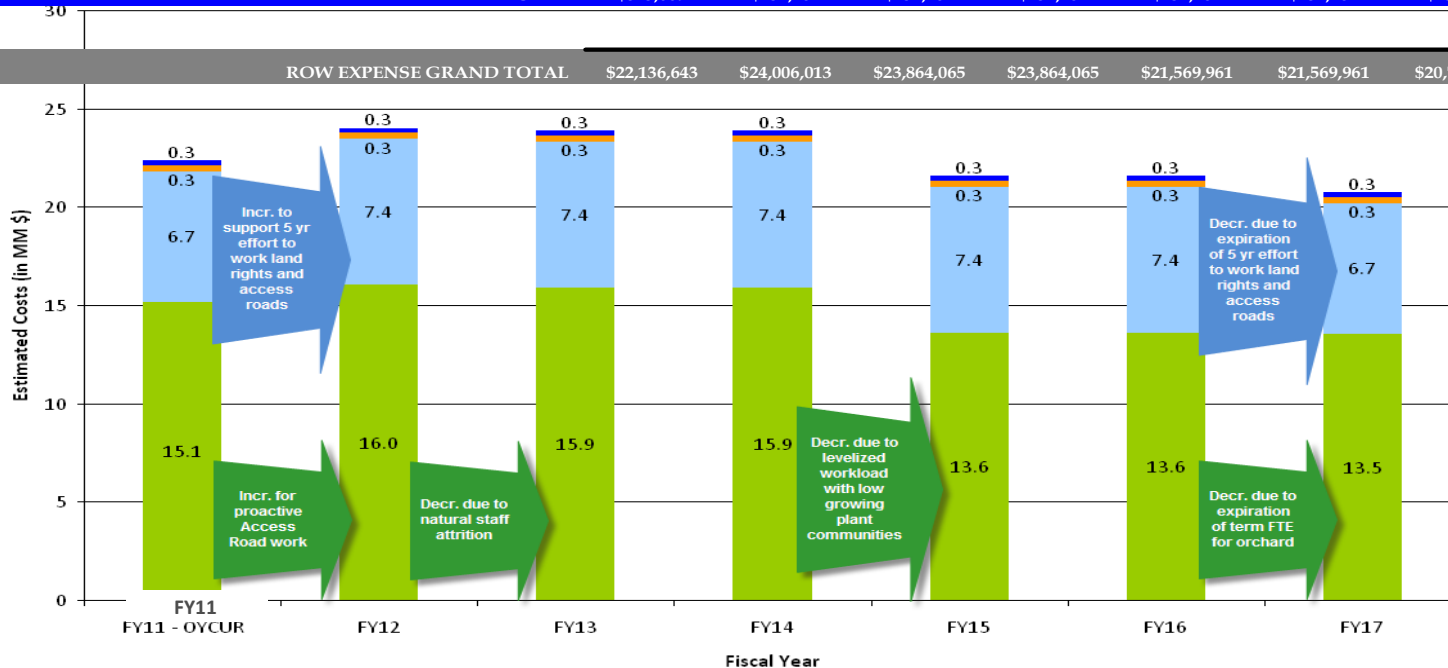
Notes	FY11	FY12	FY13	FY14	FY15	FY16	FY17
Veg Management (TFBV) Expenses for ROW (1060)							
<b>VEG MGMT (TFBV) TOTAL</b>	<b>\$13,733,008</b>	<b>\$16,034,825</b>	<b>\$15,892,877</b>	<b>\$15,892,877</b>	<b>\$13,598,773</b>	<b>\$13,598,773</b>	<b>\$13,516,347</b>

TF-Field (TLM) Expenses for ROW (1060)							
<b>TF FIELD TOTAL</b>	<b>\$328,979</b>	<b>\$313,046</b>	<b>\$313,046</b>	<b>\$313,046</b>	<b>\$313,046</b>	<b>\$313,046</b>	<b>\$313,046</b>

Real Property Services (TER) Expenses for ROW (1060)							
<b>TER TOTAL</b>	<b>\$7,729,647</b>	<b>\$7,406,861</b>	<b>\$7,406,861</b>	<b>\$7,406,861</b>	<b>\$7,406,861</b>	<b>\$7,406,861</b>	<b>\$6,660,305</b>

Transmission Engineering (TEL) Expenses for ROW (1060)							
<b>TEL TOTAL</b>	<b>\$345,009</b>	<b>\$251,281</b>	<b>\$251,281</b>	<b>\$251,281</b>	<b>\$251,281</b>	<b>\$251,281</b>	<b>\$251,281</b>

<b>ROW EXPENSE GRAND TOTAL</b>	<b>\$22,136,643</b>	<b>\$24,006,013</b>	<b>\$23,864,065</b>	<b>\$23,864,065</b>	<b>\$21,569,961</b>	<b>\$21,569,961</b>	<b>\$20,740,979</b>
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# Variance from Expense Figures in IPR

Notes	FY11	FY12	FY13	FY14	FY15	FY16	FY17
TF COMBINED PROACTIVE STRATEGY TOTAL	15,448,094	16,347,871	16,205,923	16,205,923	13,911,819	13,911,819	13,829,393
IPR 1117 TF TOTAL	15,700,000	16,061,446	16,459,378	16,853,298	17,257,030	17,656,010	18,094,961
Cost difference (proactive strategy minus IPR)	\$ (251,906)	\$ 286,425	\$ (253,455)	\$ (647,375)	\$ (3,345,211)	\$ (3,744,191)	\$ (4,265,568)
TE COMBINED PROACTIVE STRATEGY TOTAL	6,911,586	7,658,142	7,658,142	7,658,142	7,658,142	7,658,142	6,911,586
IPR 1117 TE TOTAL	8,400,000	8,610,983	8,840,223	9,069,443	9,304,970	9,540,275	9,795,683
Cost difference (proactive strategy minus IPR)	\$ (1,488,414)	\$ (952,841)	\$ (1,182,081)	\$ (1,411,301)	\$ (1,646,828)	\$ (1,882,133)	\$ (2,884,097)
<b>ROW EXPENSE GRAND TOTAL</b>	<b>\$ 22,359,680</b>	<b>\$ 24,006,013</b>	<b>\$ 23,864,065</b>	<b>\$ 23,864,065</b>	<b>\$ 21,569,961</b>	<b>\$ 21,569,961</b>	<b>\$ 20,740,979</b>
IPR GRAND TOTAL	\$ 24,100,000	\$ 24,672,429	\$ 25,299,601	\$ 25,922,741	\$ 26,562,000	\$ 27,196,285	\$ 27,890,644
Cost difference (proactive strategy minus IPR)	\$ (1,740,320)	\$ (666,416)	\$ (1,435,536)	\$ (2,058,676)	\$ (4,992,039)	\$ (5,626,324)	\$ (7,149,665)

 Decrease from IPR 1117

 Increase from IPR 1117

# Highlights of differences between IPR and ROW Proactive Asset Management Strategy

- **Vegetation Management (TFBV) service contracts being reduced over time due to . . .**
  - Conversion of corridors to low growing plant communities that require less costly maintenance
    - Moving from reclamation activities (Heavy equipment mowing, and tree removal) to a targeted herbicide application represents a 82% reduction in costs
    - Significant reduction in the amount of corrective maintenance required
  - Process efficiencies gained by transitioning from a highly reactive approach to predominantly planned, preventive maintenance
- **Low growing plant communities reduce the time required to complete working patrols**
  - Easier to access and observe conditions
  - Reduced number of items (Danger Brush / High Brush) to report
- **Staffing levels right-sized**
  - Reduced reclamation work scope, maintenance project size, and corrective maintenance will drive the reduced need for NRS Staff
  - Currently budgeted at 17 BFTE, future projection 14 BFTE
- **Decrease in LiDAR acquisition costs, including:**
  - Contract changes in FY11 resulted in savings of \$350,000
  - Approach to processing only data that is needed by TFBV resulting in savings of \$125 per mile of data collected
  - Aligning LiDAR acquisition with TFBV preventive maintenance schedule
  - Using BPA helicopters
  - Aligning LiDAR acquisition for TFBV with schedule to acquire for other groups within BPA

# FTE Changes Based on IPR

**FTE Changes from IPR**

	FY12	FY13	FY14	FY15	FY16	FY17
TFBV BFTE	-1	-3	-3	-3	-3	-3
TFBV CFTE	2	2	2	2	2	2
TER TBFTE	4	4	4	4	4	0
TER CFTE	2	3	3	3	3	0
TOTAL BFTE	-1	-3	-3	-3	-3	-3
TOTAL TBFTE	4	4	4	4	4	0
TOTAL CFTE	2	2	2	2	2	2
TOTAL FTE	5	3	3	3	3	-1

BFTE = Bonneville Power Administration Full Time Equivalent

TBFTE = Term Bonneville Power Administration Full Time Equivalent

CFTE = Contractor Full Time Equivalent

# IPR Forecast - Capital

Note: This implementation plan is a replacement program with the optimal funding, staffing resources, and outage availability to best mitigate risks identified in the strategy. These numbers are not aligned with the currently constrained IPR budget. Each sustain program is under review to determine a revised implementation plan that will align with capital budget availability, priorities, and resource constraints. This review will be complete by March 2012.

System Replacement Sustain Strategy	FY 12 OY	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19	FY 20	FY 21
LR - Tribal Renewals Node 5671	\$971	\$3,800	\$3,900	\$5,100	\$0	\$0	\$0	\$0	\$0	\$0
LR - Veg Mitigation Node 5672	\$1,004	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500
LR - Access Roads Node 5673	\$6,880	\$1,500	\$3,000	\$3,000	\$2,850	\$2,850	\$2,850	\$2,850	\$2,850	\$2,850
<b>Sub-total</b>	<b>\$8,855</b>	<b>\$5,800</b>	<b>\$7,400</b>	<b>\$8,600</b>	<b>\$3,350</b>	<b>\$3,350</b>	<b>\$3,350</b>	<b>\$3,350</b>	<b>\$3,350</b>	<b>\$3,350</b>
<b>ROW - Access Roads for Sustain</b>	\$13,508	\$12,706	\$11,116	\$10,900	\$10,100	\$10,100	\$10,100	\$10,100	\$10,100	\$10,100
<b>ROW - Access Roads</b>	\$2,432	\$2,039	\$3,447	\$2,669	\$3,475	\$3,483	\$3,483	\$3,483	\$3,483	\$3,483
<b>Sub-total</b>	<b>\$15,940</b>	<b>\$14,745</b>	<b>\$14,563</b>	<b>\$13,569</b>	<b>\$13,575</b>	<b>\$13,583</b>	<b>\$13,583</b>	<b>\$13,583</b>	<b>\$13,583</b>	<b>\$13,583</b>
<b>Total</b>	<b>\$24,795</b>	<b>\$20,545</b>	<b>\$21,963</b>	<b>\$22,169</b>	<b>\$16,925</b>	<b>\$16,933</b>	<b>\$16,933</b>	<b>\$16,933</b>	<b>\$16,933</b>	<b>\$16,933</b>

- Capital for Access Road construction and easements is driven by the level of construction activities within the Steel and Wood Line sustain programs expected over the next 5 years.

# Capital Cost Estimates -Assumptions

- Access roads cost for services capital reflects the growth of the CMO design and construction contract program
- Out year projections are 3 CMO construction projects per year
- Out year projections are 3-4 CMO design projects per year
- Increased construction services costs for inspection in the wood pole replacements program is anticipated
- Supplemental labor costs are for CFTE and inspection services
- No additional BFTE needed to support additional Access Roads Expense work
- FY15 forward - annual overtime for capital work will have a maximum at \$4000

Executive Summary for Updated Strategy

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**Program Accomplishments FY10-11**

# Progress Update FY10 Capital Program Accomplishments

FY10 Program	Work Planned	Work Accomplished	Explanation for Variance
• LR Tribal Renewals	Flathead and Warm Springs	100% completed	n/a
• LR Veg Management	Start up of program; planned for 10 buybacks	We accomplished 3 buybacks our first year.	The buybacks were substantially underestimated.
• LR Access Roads	Plan was supporting Access road group	All work was accomplished	Projects were under-estimated
• Access Roads	Scheduled to complete 11 ongoing AR projects in support of Wood, Steel, and AR Upgrades.	Completed 11 AR projects in support of Wood, Steel, and AR Upgrades	Minor variation in actual project costs.

## **Rights-of-Way Plan vs. Actuals, FY 10 ( \$000s)**

	FY 10 Plan	FY 10 Actuals
<b>LR Tribal Renewals</b>	\$18,677	\$18,677
<b>LR Veg Mitigation</b>	\$234	\$228
<b>LR Access Roads</b>	\$760	\$760
<b>Access Roads</b>	\$9,283	\$9,900
<b>Total Capital Plan</b>	<b>\$28,954</b>	<b>\$29,565</b>

# Progress Update FY11 Capital Program Accomplishments

FY11 Program	Work Planned	Work Accomplished	Explanation for Variance
• LR Tribal Renewals	Renewals for Flathead and Muckelshoot	Flathead was accomplished	Muckelshoot delayed
• LR Veg Management	12 planned buybacks	9 buybacks accomplished	2 deferred for condemnation
• LR Access Roads	38 planned roads to acquire	70 % was accomplished	30% unaccomplished due to resources
• Access Roads (AR)	Scheduled to complete 20 ongoing AR projects in Support of Wood, Steel, and AR Upgrades.	Completed 19 AR projects in Support of Wood, Steel, and AR Upgrades.	Bandon Rogue project contract spent less in FY 11 and remainder was moved into FY 12.

## Rights-of-Way Plan vs. Actuals, FY11 ( \$000s)

	FY 11 Plan	FY 11 Actuals
LR Tribal Renewals	\$2,263	\$1,577
LR Veg Mitigation	\$1,156	\$1,027
LR AccessRoads	\$3,540	\$2,958
Access Roads	\$13,094	\$12,114
<b>Total Capital Plan</b>	<b>\$20,053</b>	<b>\$17,676</b>



# APPENDIX

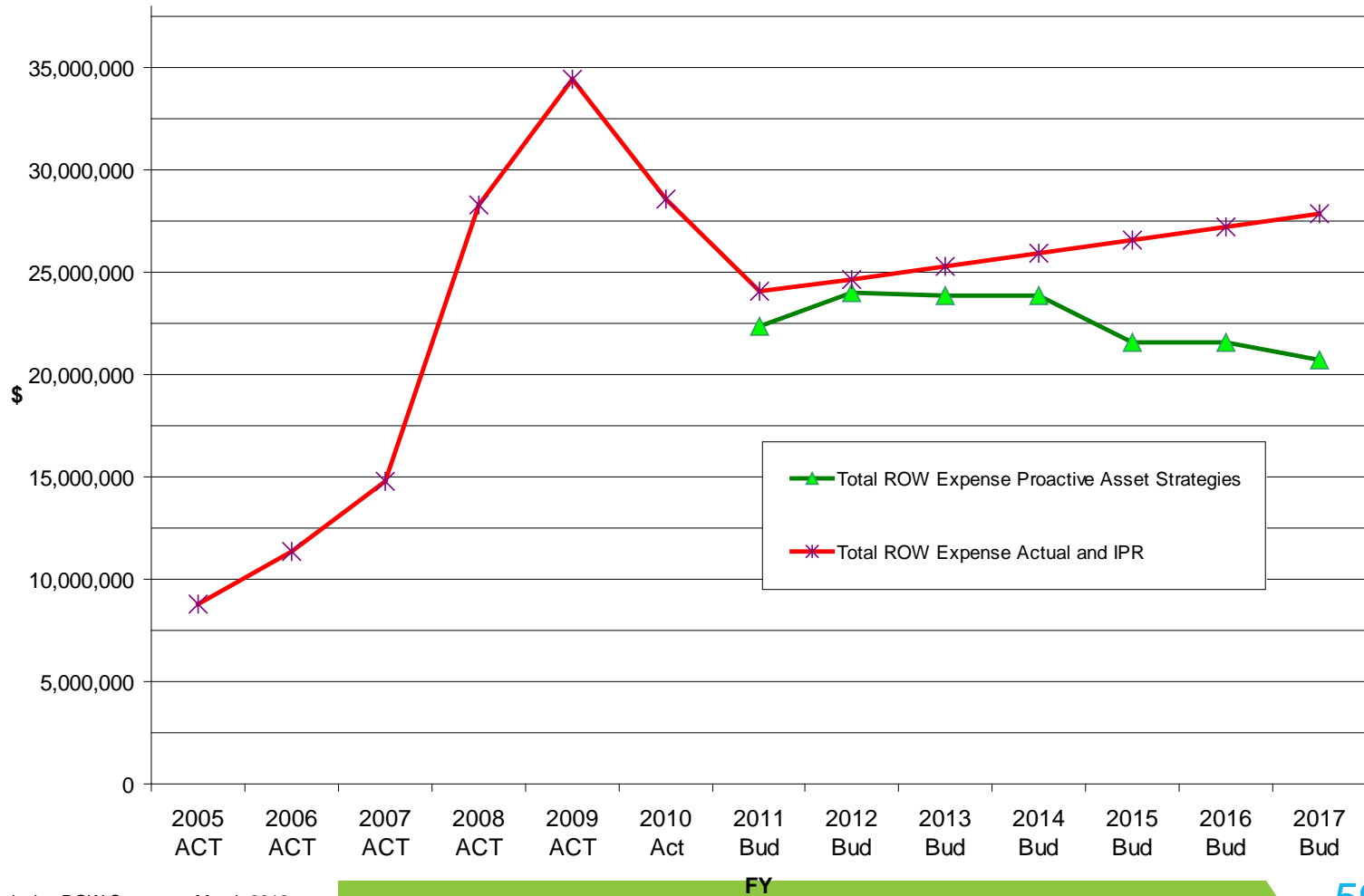
# Overall ROW Cost Estimate Assumptions

- No inflation built into model
- OYCUR figures for FY11 were used as the baseline for all ROW expenses
- Additional \$983,000 of LiDAR acquisition requested by TFBV for FY11 was not budgeted for in the TER portion of the ROW-1061 budget; this expense will be taken from a different area of the 1061 budget
- Going forward, there will be coordination between TFBV, TER, TLM, and TEL for budget estimates for ROW-1061 work

*See individual program assumptions for more details*

# Comparison of Proactive Strategy Costs to Previous Projection of ROW Costs

ROW Expense Budget Comparison



# Capital Cost Estimates for Recommended Strategies

Signifies change from prior year value	Notes	FY11	FY12	FY13	FY14	FY15	FY16	FY17
<b>Access Roads Capital</b>								
<b>(All capital minus cost to support line upgrades and expansions)</b>								
<b>Personnel</b>								
		206,000	208,000	210,000	210,000	214,000	216,000	221,000
		7,000	7,000	7,000	7,000	4,000	4,000	4,000
		70,500	72,600	73,100	74,100	76,100	77,100	77,100
		500	500	-	-	-	-	-
		-	-	-	-	-	-	-
		47,000	49,000	50,000	52,000	54,000	54,000	54,000
		-	-	-	-	-	-	-
		500	500	700	700	700	700	700
	<b>SUBTOTAL</b>	<b>331,500</b>	<b>337,600</b>	<b>340,800</b>	<b>343,800</b>	<b>348,800</b>	<b>351,800</b>	<b>356,800</b>
<b>Equipment and Materials</b>								
		5,000	5,500	5,000	5,500	6,000	6,000	6,000
		33,000	35,000	35,000	35,000	36,000	36,000	38,000
		1,000	1,500	1,500	2,000	2,000	2,000	2,000
	<b>SUBTOTAL</b>	<b>39,000</b>	<b>42,000</b>	<b>41,500</b>	<b>42,500</b>	<b>44,000</b>	<b>44,000</b>	<b>46,000</b>
<b>Services</b>								
		2,100,000	3,100,000	2,500,000	1,200,000	1,700,000	1,700,000	1,700,000
		800,000	300,000	500,000	700,000	700,000	700,000	700,000
		270,000	440,000	440,000	520,000	520,000	520,000	520,000
		-	-	-	-	-	-	-
	<b>SUBTOTAL</b>	<b>3,170,000</b>	<b>3,840,000</b>	<b>3,440,000</b>	<b>2,420,000</b>	<b>2,920,000</b>	<b>2,920,000</b>	<b>2,920,000</b>
<b>Other Expenses (communication, training, others)</b>								
		325,000	325,000	350,000	375,000	375,000	375,000	375,000
		13,000	13,000	14,000	14,000	16,000	16,000	17,000
		4,500	4,500	4,500	4,500	4,500	4,500	4,500
	<b>SUBTOTAL</b>	<b>342,500</b>	<b>342,500</b>	<b>368,500</b>	<b>393,500</b>	<b>395,500</b>	<b>395,500</b>	<b>396,500</b>
<b>Overhead/Indirects</b>								
		2,140,000	2,140,000	2,140,000	2,140,000	2,140,000	2,140,000	2,140,000
	<b>SUBTOTAL</b>	<b>2,140,000</b>	<b>2,140,000</b>	<b>2,140,000</b>	<b>2,140,000</b>	<b>2,140,000</b>	<b>2,140,000</b>	<b>2,140,000</b>
	<b>Total</b>	<b>\$ 6,023,000</b>	<b>\$ 6,702,100</b>	<b>\$ 6,330,800</b>	<b>\$ 5,339,800</b>	<b>\$ 5,848,300</b>	<b>\$ 5,851,300</b>	<b>\$ 5,859,300</b>

# Capital Cost Estimates for Recommended Strategies

Signifies change from prior year value	Notes	FY11	FY12	FY13	FY14	FY15	FY16	FY17
<b>Access Roads Capital - Allocation of the Cost Estimate to Support Upgrades for Line Construction Projects</b>								
<b>Personnel</b>								
CAP ANNUAL STRAIGHT-TIME PAY		28,000	28,000	28,000	28,000	28,000	29,000	29,000
CAP ANNUAL OVERTIME		-	-	-	-	-	-	-
CAP BENEFITS LOADING		9,500	9,500	10,000	10,000	10,000	11,000	11,000
CAP HOURLY STRAIGHT-TIME PAY		-	-	500	800	800	800	800
CAP HOURLY OVERTIME		-	-	-	-	-	-	-
CAP LEAVE LOADING		6,000	6,000	7,000	7,000	7,000	7,000	7,000
RET ANNUAL STRAIGHT-TIME PAY		-	-	-	-	-	-	-
RET BENEFITS LOADING		-	-	-	-	-	-	-
<b>SUBTOTAL</b>		<b>43,500</b>	<b>43,500</b>	<b>45,500</b>	<b>45,800</b>	<b>45,800</b>	<b>47,800</b>	<b>47,800</b>
<b>Equipment and Materials</b>								
CAP MATERIALS AND EQUIPEMENT USE		2,500	2,500	2,500	2,500	2,500	2,500	2,500
CAP GSA RENTAL		13,000	13,000	13,000	13,000	14,000	14,000	14,000
CAP VEHICLE AND EQUIPMENT USE		-	-	-	-	-	-	-
<b>SUBTOTAL</b>		<b>15,500</b>	<b>15,500</b>	<b>15,500</b>	<b>15,500</b>	<b>16,500</b>	<b>16,500</b>	<b>16,500</b>
<b>Services</b>								
CAP CONSTRUCTION CONTRACTS		5,900,000	5,300,000	5,700,000	7,000,000	6,500,000	6,500,000	6,500,000
CAP SERVICE CONTRACTS		600,000	800,000	900,000	900,000	900,000	900,000	900,000
CAP SUPPLMNTL LABOR CONTRACT		80,000	160,000	160,000	180,000	180,000	180,000	180,000
RET SUPPLMNTL LABOR CONTRACT		-	-	-	-	-	-	-
<b>SUBTOTAL</b>		<b>6,580,000</b>	<b>6,260,000</b>	<b>6,760,000</b>	<b>8,080,000</b>	<b>7,580,000</b>	<b>7,580,000</b>	<b>7,580,000</b>
<b>Other Expenses (communication, training, others)</b>								
CAP LAND		-	-	-	-	-	-	-
CAP TRAVEL		14,000	14,000	15,000	16,000	15,000	15,000	15,000
CAP OTHER		4,500	4,500	4,500	4,500	4,500	4,500	4,500
<b>SUBTOTAL</b>		<b>18,500</b>	<b>18,500</b>	<b>19,500</b>	<b>20,500</b>	<b>19,500</b>	<b>19,500</b>	<b>19,500</b>
<b>Overhead/Indirects</b>								
OVERHEAD/INDIRECTS		60,000	60,000	60,000	60,000	60,000	60,000	60,000
<b>SUBTOTAL</b>		<b>60,000</b>	<b>60,000</b>	<b>60,000</b>	<b>60,000</b>	<b>60,000</b>	<b>60,000</b>	<b>60,000</b>
<b>ACCESS ROADS CAPITAL TOTAL</b>		<b>\$ 6,717,500</b>	<b>\$ 6,397,500</b>	<b>\$ 6,900,500</b>	<b>\$ 8,221,800</b>	<b>\$ 7,721,800</b>	<b>\$ 7,723,800</b>	<b>\$ 7,723,800</b>
<b>ACCESS ROADS CAPITAL GRAND TOTAL</b>		<b>\$ 12,740,500</b>	<b>\$ 13,099,600</b>	<b>\$ 13,231,300</b>	<b>\$ 13,561,600</b>	<b>\$ 13,570,100</b>	<b>\$ 13,575,100</b>	<b>\$ 13,583,100</b>

# Veg Management (TFBV) Details

Signifies change from prior year value	Notes	FY11	FY12	FY13	FY14	FY15	FY16	FY17
<b>Veg Management (TFBV) Expenses for ROW (1060)</b>								
<b>Personnel</b>								
EXP ANNUAL STRAIGHT-TIME PAY	see assumption TFBV-2	1,271,451	1,271,451	1,129,503	1,129,503	1,129,503	1,129,503	1,047,077
EXP BENEFITS LOADING		328,897	328,897	328,897	328,897	328,897	328,897	328,897
EXP ANNUAL OVERTIME		30,000	30,000	30,000	30,000	30,000	30,000	30,000
	<b>SUBTOTAL</b>	<b>1,630,348</b>	<b>1,630,348</b>	<b>1,488,400</b>	<b>1,488,400</b>	<b>1,488,400</b>	<b>1,488,400</b>	<b>1,405,974</b>
<b>Equipment and Materials</b>								
EXP MATERIALS AND EQUIPMENT		200,000	200,000	200,000	200,000	200,000	200,000	200,000
EXP GSA RENTAL		140,000	140,000	140,000	140,000	140,000	140,000	140,000
EXP VEHICLE AND EQUIPMENT USE		2,000	2,000	2,000	2,000	2,000	2,000	2,000
	<b>SUBTOTAL</b>	<b>342,000</b>	<b>342,000</b>	<b>342,000</b>	<b>342,000</b>	<b>342,000</b>	<b>342,000</b>	<b>342,000</b>
<b>Services</b>								
EXP SERVICE CONTRACTS	* Vegetation Management work	11,941,600	11,841,377	11,841,377	11,841,377	9,547,273	9,547,273	9,547,273
EXP SERVICE CONTRACTS	* Access Roads work, see assumption TFBV-4	1,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000
EXP SUPPLMNTL LABOR CONTRACT		110,000	110,000	110,000	110,000	110,000	110,000	110,000
	<b>SUBTOTAL</b>	<b>13,051,600</b>	<b>13,951,377</b>	<b>13,951,377</b>	<b>13,951,377</b>	<b>11,657,273</b>	<b>11,657,273</b>	<b>11,657,273</b>
<b>Other Expenses (communication, training, others)</b>								
EXP TRAINING EXP		10,000	10,000	10,000	10,000	10,000	10,000	10,000
EXP TRAVEL		100,000	100,000	100,000	100,000	100,000	100,000	100,000
EXP OTHER EMPLOYEE COSTS		1,000	1,000	1,000	1,000	1,000	1,000	1,000
EXP RENTS & LEASES		100	100	100	100	100	100	100
	<b>SUBTOTAL</b>	<b>111,100</b>	<b>111,100</b>	<b>111,100</b>	<b>111,100</b>	<b>111,100</b>	<b>111,100</b>	<b>111,100</b>
	<b>VEG MGMT (TFBV) TOTAL</b>	<b>\$ 15,135,048</b>	<b>\$ 16,034,825</b>	<b>\$ 15,892,877</b>	<b>\$ 15,892,877</b>	<b>\$ 13,598,773</b>	<b>\$ 13,598,773</b>	<b>\$ 13,516,347</b>

# Veg Management (TFBV) Details - Assumptions

Assumption ID number is the work group followed by sequential numbers

Assumption ID	Description	Values used in calculations
TFBV-1	<b>FY11-FY12:</b> No changes to FTE - 17 NRS BFTE (1 Supervisory NRS, 1 Program Manager, 1 Analyst, 4 Assistant NRSs, 10 Field NRSs); base cost from 2011 OYCUR estimate	\$ 1,271,451
TFBV-2	<b>FY13-FY18:</b> 14 BFTE - FTE reduces due to natural attrition. 11 NRS BFTE: 8 Field NRSs, 3 NRS Assistant BFTE, 1 Supervisory NRS BFTE, 1 Program Manager BFTE, 1 Analyst	\$ 1,047,077
TFBV-3	<b>FY13-FY16:</b> 1 term BFTE needed to support orchards mitigation work in partnership with Realty (1 term BFTE @ \$82,426) - same cost as a Realty Specialist Term BFTE	\$ 82,426
TFBV-4	<b>FY11</b> - Access Roads Expense contract services (per IPR)	\$ 1,000,000
TFBV-5	<b>FY12 forward:</b> Access Roads Expense contract services increase by \$1MM to support proactive repair work per the recommended proactive strategy to managing the ROW asset	\$ 2,000,000
TFBV-6	Estimated average cost per acre for reclamation work <i>based on high end of range calculated in Total Cost of Ownership model from Veg Mgmt Strategic Sourcing project</i>	\$ 800
TFBV-7	Estimated average cost per acre for partial reclamation <i>based on high end of range calculated in Total Cost of Ownership model from Veg Mgmt Strategic Sourcing project</i>	\$ 290

Cells with green backgrounds were used in calculations for the cost estimates

# Veg Management (TFBV) Details – Assumptions cont'd

Assumption ID	Description	Values used in calculations
TFBV-8	Estimated average cost per acre for follow up herbicide treatment of Low Growing Plant Communities <i>based on high end of range calculated in Total Cost of Ownership model from Veg Mgmt Strategic Sourcing project</i>	\$ 147
TFBV-9	Net treatable acres <i>Approximately 122,500 of the 266,000 acres of the Transmission corridors are under agricultural management and require ongoing monitoring, but not cyclical maintenance activities to be performed by BPA. The other approximately 144,000 acres require active vegetation management</i>	144,102
TFBV-10	% of acres treated each year	20%
TFBV-11	Acres treated each year	28,820
TFBV-12	Major reclamation efforts are reducing over time - High level of effort began in FY09 following the outage and taper down to a stabilized work load with primarily low-growing plant communities by FY15	



# Veg Management (TFBV) Details – Assumptions cont'd

Assumption ID	Description	Values used in calculations	Acres
TFBV-13	FY12 -Reclamation - Est % of scheduled treatment acres (% of 20% of net treatable)	20%	5,764
TFBV-14	FY12 -Partial Reclamation - Est % of scheduled treatment acres (% of 20% of net treatable)	50%	14,410
TFBV-15	FY12 -Minimum Maintenance- Est % of scheduled treatment acres (% of 20% of net treatable)	30%	8,646
TFBV-16	FY13 -Reclamation - Est % of scheduled treatment acres (% of 20% of net treatable)	20%	5,764
TFBV-17	FY13 -Partial Reclamation - Est % of scheduled treatment acres (% of 20% of net treatable)	50%	14,410
TFBV-18	FY13 -Minimum Maintenance- Est % of scheduled treatment acres (% of 20% of net treatable)	30%	8,646
TFBV-19	FY14 -Reclamation - Est % of scheduled treatment acres (% of 20% of net treatable)	20%	5,764
TFBV-20	FY14 -Partial Reclamation - Est % of scheduled treatment acres (% of 20% of net treatable)	50%	14,410
TFBV-21	FY14 -Minimum Maintenance- Est % of scheduled treatment acres (% of 20% of net treatable)	30%	8,646
TFBV-22	FY15-FY17 -Reclamation - Est % of scheduled treatment acres (% of 20% of net treatable)	10%	2,882
TFBV-23	FY15-FY17 -Partial Reclamation - Est % of scheduled treatment acres (% of 20% of net treatable)	40%	11,528
TFBV-24	FY15-FY17 -Minimum Maintenance- Est % of scheduled treatment acres (% of 20% of net treatable)	50%	14,410

# Veg Management (TFBV) Details – Assumptions cont'd

Assumption ID	Description	Values used in calculations
TFBV-25	Hot spot work hours in FY10 (per 1048 Hyperion report)	17,976
TFBV-26	Hot spot budget estimate in FY11 (per budget estimates provided by NRSs at start of FY11)	\$ 1,793,033
TFBV-27	FY12 forward - Estimated number of hot spots per year	2,500
TFBV-28	Estimated hours of work per hot spot (corridor with vegetation issues)	5
TFBV-29	Average cost of treatment for each hot spot	\$ 424
TFBV-30	Avg hourly cost per inspector (not holding line clearance)	\$ 50
TFBV-31	Inspector Hours 2011 and beyond = 12 (12 inspectors in 2010) @ 1200 hrs/yr/full time inspector (\$60,000 per yr/inspector)	14,400

# Veg Management (TFBV) Details – Assumptions cont'd

Assumption ID	Description	Values used in calculations
	<b>Assumptions about unknowns and further opportunities</b>	
TFBV-32	Hrly rate for inspectors may decrease over time by increasing the bidding pool and revising the requirements of inspectors to focus only on quality management	
TFBV-33	Assume funds for software to support Veg Management tracking and workflow will come from a different cost center from ROW-1061	
TFBV-34	Expense costs to maintain software to support Veg Management (estimated \$300,000/yr to maintain) NOT included in the TFBV cost estimates	
TFBV-35	Some amount of CFTE will be needed to help acquire and input vegetation management data once the new software is put in place; this amount has not been estimated	
TFBV-36	Trends in oil and fuel prices may impact the future costs	
TFBV-37	Error rate for false positive vegetation issues identified by TLM requires field confirmation by NRSs (wasted transportation and analysis time)	
TFBV-38	<b>UNKNOWN RISK:</b> May have significant cost increase risk due to revised ROW width standard in FAC-003. This would result in substantial reclamation level work along the edges of the corridors	

# Realty (TER) Details

Signifies change from prior year value	Notes	FY11	FY12	FY13	FY14	FY15	FY16	FY17
<b>Real Property Services (TER) Expenses for ROW (1060)</b>								
<b>Personnel</b>								
EXP ANNUAL STRAIGHT-TIME PAY	see assumptions TER-5 and TER-6	1,711,500	2,041,205	2,041,205	2,041,205	2,041,205	2,041,205	1,711,500
EXP ANNUAL OVERTIME		21,000	21,000	21,000	21,000	21,000	21,000	21,000
EXP BENEFITS LOADING		457,826	457,826	457,826	457,826	457,826	457,826	457,826
	<b>SUBTOTAL</b>	<b>2,190,326</b>	<b>2,520,031</b>	<b>2,520,031</b>	<b>2,520,031</b>	<b>2,520,031</b>	<b>2,520,031</b>	<b>2,190,326</b>
<b>Equipment and Materials</b>								
EXP MATERIALS AND EQUIPMENT		47,500	47,500	47,500	47,500	47,500	47,500	47,500
EXP GSA RENTAL	see assumption TER-10	150,600	205,124	205,124	205,124	205,124	205,124	150,600
EXP VEHICLE AND EQUIPMENT USE		300	300	300	300	300	300	300
	<b>SUBTOTAL</b>	<b>198,400</b>	<b>252,924</b>	<b>252,924</b>	<b>252,924</b>	<b>252,924</b>	<b>252,924</b>	<b>198,400</b>
<b>Services</b>								
EXP SERVICE CONTRACTS		1,576,179	1,576,179	1,576,179	1,576,179	1,576,179	1,576,179	1,576,179
EXP SUPPLMNTL LABOR CONTRACT	see assumptions TER-7, TER-8, TER-13 thru TER-18	1,909,400	2,223,728	2,223,728	2,223,728	2,223,728	2,223,728	1,909,400
	<b>SUBTOTAL</b>	<b>3,485,579</b>	<b>3,799,907</b>	<b>3,799,907</b>	<b>3,799,907</b>	<b>3,799,907</b>	<b>3,799,907</b>	<b>3,485,579</b>
<b>Other Expenses (communication, training, others)</b>								
EXP TRAVEL	see assumption TER-9	121,000	169,000	169,000	169,000	169,000	169,000	121,000
EXP RENTS & LEASES		115,000	115,000	115,000	115,000	115,000	115,000	115,000
EXP LAND		150,000	150,000	150,000	150,000	150,000	150,000	150,000
EXP OTHER		400,000	400,000	400,000	400,000	400,000	400,000	400,000
	<b>SUBTOTAL</b>	<b>786,000</b>	<b>834,000</b>	<b>834,000</b>	<b>834,000</b>	<b>834,000</b>	<b>834,000</b>	<b>786,000</b>
<b>LiDAR (TERG)</b>								
LiDAR services		1,464,450	1,518,400	1,106,950	1,690,000	1,281,800	994,500	930,800
	<b>SUBTOTAL</b>	<b>1,464,450</b>	<b>1,518,400</b>	<b>1,106,950</b>	<b>1,690,000</b>	<b>1,281,800</b>	<b>994,500</b>	<b>930,800</b>
	<b>TER TOTAL</b>	<b>\$ 6,660,305</b>	<b>\$ 7,406,861</b>	<b>\$ 7,406,861</b>	<b>\$ 7,406,861</b>	<b>\$ 7,406,861</b>	<b>\$ 7,406,861</b>	<b>\$ 6,660,305</b>

# Realty (TER) Details - Assumptions

Assumption ID number is the work group followed by sequential numbers

Assumption ID	Description	Values used in calculations
TER - 1	Logged cases needing rights review and negotiation work by BPA Realty	3,000
TER - 2	Cases that can be completed each year using existing Realty BFTE and CFTE	500
TER - 3	Time period for working through the backlog	5 years, FY12-FY16
TER - 4	Target # years to work down backlog of rights negotiations work (assume start in FY12)	5
TER - 5	# of Term Realty Specialist BFTE needed to work down backlog such that only ~500 cases per year remain	4
TER - 6	Loaded annual cost per Realty Specialist BFTE	82,426
TER - 7	# of Realty Tech CFTE needed to support work down of backlog	1
TER - 8	Loaded annual cost per Realty Tech	70,224
TER - 9	Estimated annual travel cost per per year for the 4 term RSs (Realty Specialists)	48,000
TER - 10	Estimated vehicle cost (4 vehicles @ \$54,524/yr)	54,524
TER - 11	Currently we have approximately 22,000 active access road parcels and 25,000 identified ARMS parcels. The analysis to determine required acquisitions would be in two phases: 1. Catalogue approximately 3,000 possible new access road parcels and assign Acquire/Do Not Acquire status. 2. Catalogue discrepancies between the as traveled and as acquired roads within the 22,000 existing parcels. Research acquisition documents versus discrepancies to assign Acquisition Action Required/No Action Required status	
TER - 12	Time period for identifying the Access Roads work	1 year, FY12
TER - 13	# of Realty Tech CFTE needed to support Access Roads acquisition work	1
TER - 14	Loaded annual cost per Realty Tech CFTE to support Access Roads work	70,224
TER - 15	# of Mapping Tech CFTE needed to support Access Roads acquisition work	1
TER - 16	Loaded annual cost per Mapping Tech CFTE	80,331
TER - 17	# of GIS Analysts CFTE needed to support Access Roads acquisition work	1
TER - 18	Loaded annual cost per GIS Analyst	93,549

Cells with green backgrounds were used in calculations for the cost estimates

# Realty (TER) Details - Assumptions

Assumption ID	Description	Values used in calculations
TER - 19	Geospatial BFTE and CFTE estimates are included in the TER estimates, but may vary based on the LiDAR plan for out years	see TERG LiDAR costs tabs for details
TER - 20	LiDAR acquisition estimates were included in the FY11 IPR base for service contracts under TER	
TER - 21	Baseline in FY11 - Service contracts estimates for TER equal the service contracts amount in FY11 IPR for TER minus the FY11 service contracts cost for LiDAR (TERG LiDAR Cost tab) -- the LiDAR costs are itemized on a separate line	
TER - 22	FY12 - Service contracts to support flying LiDAR in advance of preventive maintenance - use the LiDAR data to support creation of corridor treatment prescriptions	\$ 1,518,400
TER - 23	FY13 - Service contracts to support flying LiDAR in advance of preventive maintenance - use the LiDAR data to support creation of corridor treatment prescriptions	\$ 1,106,950
TER - 24	FY14 - Service contracts to support flying LiDAR in advance of preventive maintenance - use the LiDAR data to support creation of corridor treatment prescriptions	\$ 1,690,000
TER - 25	FY15 - Service contracts to support flying LiDAR in advance of preventive maintenance - use the LiDAR data to support creation of corridor treatment prescriptions	\$ 1,281,800
TER - 26	FY16 - Service contracts to support flying LiDAR in advance of preventive maintenance - use the LiDAR data to support creation of corridor treatment prescriptions	\$ 994,500
TER - 27	FY17 - Service contracts to support flying LiDAR in advance of preventive maintenance - use the LiDAR data to support creation of corridor treatment prescriptions	\$ 930,800
TER - 28	* Additional efficiencies and cost reductions for LiDAR may be gained by re-stacking the corridor vegetation preventive maintenance cycles	
TER - 29	Aircraft services (TC) costs for LiDAR missions are not charged to ROW -1061	

# TLM Details and Assumptions

Signifies change from prior year value	Notes	FY11	FY12	FY13	FY14	FY15	FY16	FY17
<b>TF - Field (TLM) Expenses for ROW (1060)</b>								
<b>Personnel</b>								
		5,546	5,546	5,546	5,546	5,546	5,546	5,546
		9,506	9,506	9,506	9,506	9,506	9,506	9,506
		996	996	996	996	996	996	996
		23,201	23,201	23,201	23,201	23,201	23,201	23,201
		31,297	31,297	31,297	31,297	31,297	31,297	31,297
		14,000	14,000	14,000	14,000	14,000	14,000	14,000
	<b>SUBTOTAL</b>	<b>84,546</b>	<b>84,546</b>	<b>84,546</b>	<b>84,546</b>	<b>84,546</b>	<b>84,546</b>	<b>84,546</b>
<b>Equipment and Materials</b>								
		13,000	13,000	13,000	13,000	13,000	13,000	13,000
		21,000	21,000	21,000	21,000	21,000	21,000	21,000
		130,000	130,000	130,000	130,000	130,000	130,000	130,000
	<b>SUBTOTAL</b>	<b>164,000</b>	<b>164,000</b>	<b>164,000</b>	<b>164,000</b>	<b>164,000</b>	<b>164,000</b>	<b>164,000</b>
<b>Services</b>								
		22,000	22,000	22,000	22,000	22,000	22,000	22,000
		5,000	5,000	5,000	5,000	5,000	5,000	5,000
	<b>SUBTOTAL</b>	<b>27,000</b>	<b>27,000</b>	<b>27,000</b>	<b>27,000</b>	<b>27,000</b>	<b>27,000</b>	<b>27,000</b>
<b>Other Expenses (communication, training, others)</b>								
		10,000	10,000	10,000	10,000	10,000	10,000	10,000
		27,500	27,500	27,500	27,500	27,500	27,500	27,500
	<b>SUBTOTAL</b>	<b>37,500</b>	<b>37,500</b>	<b>37,500</b>	<b>37,500</b>	<b>37,500</b>	<b>37,500</b>	<b>37,500</b>
	<b>TF FIELD TOTAL</b>	<b>\$ 313,046</b>	<b>\$ 313,046</b>	<b>\$ 313,046</b>	<b>\$ 313,046</b>	<b>\$ 313,046</b>	<b>\$ 313,046</b>	<b>\$ 313,046</b>

Assumption ID	Description	Values used in calculations
TLM - 1	Forecasted budget is flat FY12-FY17	
TLM-2	Changes to use of TLM for vegetation management patrols will result in changes to the TLM costs in ROW-1061	

# TEL Details and Assumptions

Signifies change from prior year value	Notes	FY11	FY12	FY11	FY14	FY15	FY16	FY17
<b>Transmission Engineering (TEL) Expenses for ROW (1060)</b>								
<b>Personnel</b>								
	EXP ANNUAL STRAIGHT-TIME PAY	170,983	170,983	170,983	170,983	170,983	170,983	170,983
	EXP BENEFITS LOADING	45,700	45,700	45,700	45,700	45,700	45,700	45,700
	<b>SUBTOTAL</b>	<b>216,683</b>	<b>216,683</b>	<b>216,683</b>	<b>216,683</b>	<b>216,683</b>	<b>216,683</b>	<b>216,683</b>
<b>Services</b>								
	EXP SUPPLMNTL LABOR CONTRACT	30,598	30,598	30,598	30,598	30,598	30,598	30,598
	<b>SUBTOTAL</b>	<b>30,598</b>	<b>30,598</b>	<b>30,598</b>	<b>30,598</b>	<b>30,598</b>	<b>30,598</b>	<b>30,598</b>
<b>Other Expenses (communication, training, others)</b>								
	EXP TRAVEL	4,000	4,000	4,000	4,000	4,000	4,000	4,000
	<b>SUBTOTAL</b>	<b>4,000</b>	<b>4,000</b>	<b>4,000</b>	<b>4,000</b>	<b>4,000</b>	<b>4,000</b>	<b>4,000</b>
	<b>TEL TOTAL</b>	<b>\$ 251,281</b>	<b>\$ 251,281</b>	<b>\$ 251,281</b>	<b>\$ 251,281</b>	<b>\$ 251,281</b>	<b>\$ 251,281</b>	<b>\$ 251,281</b>

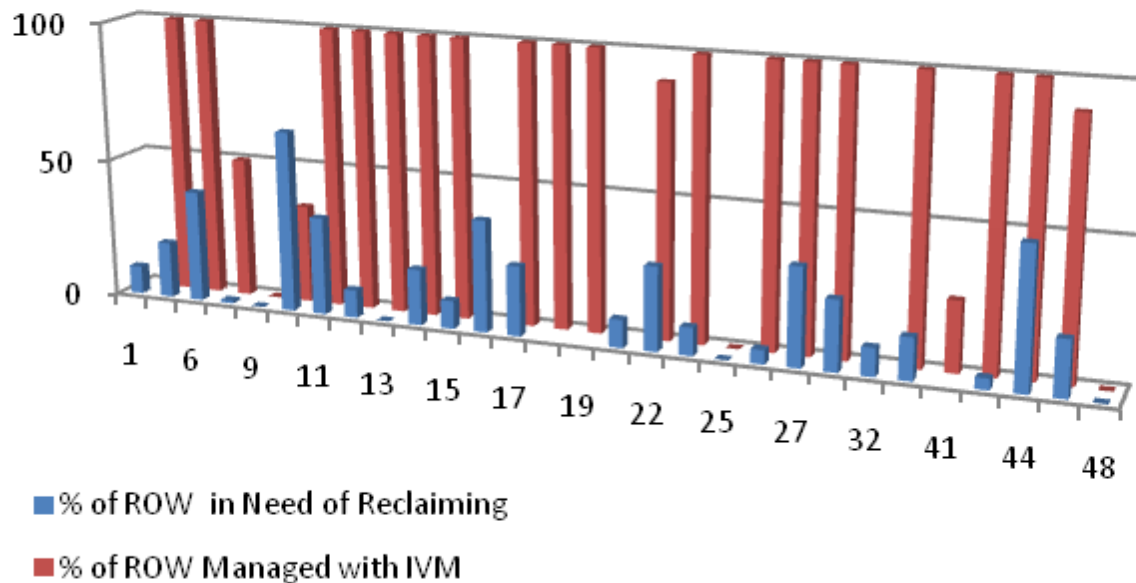
Assumption ID	Description	Values used in calculations
TEL - 1	Forecasted budget is flat FY12-FY17	



# Benchmarking Data IVM

Question 1: What % of your Transmission and Sub Transmission ROWs are IVM managed?

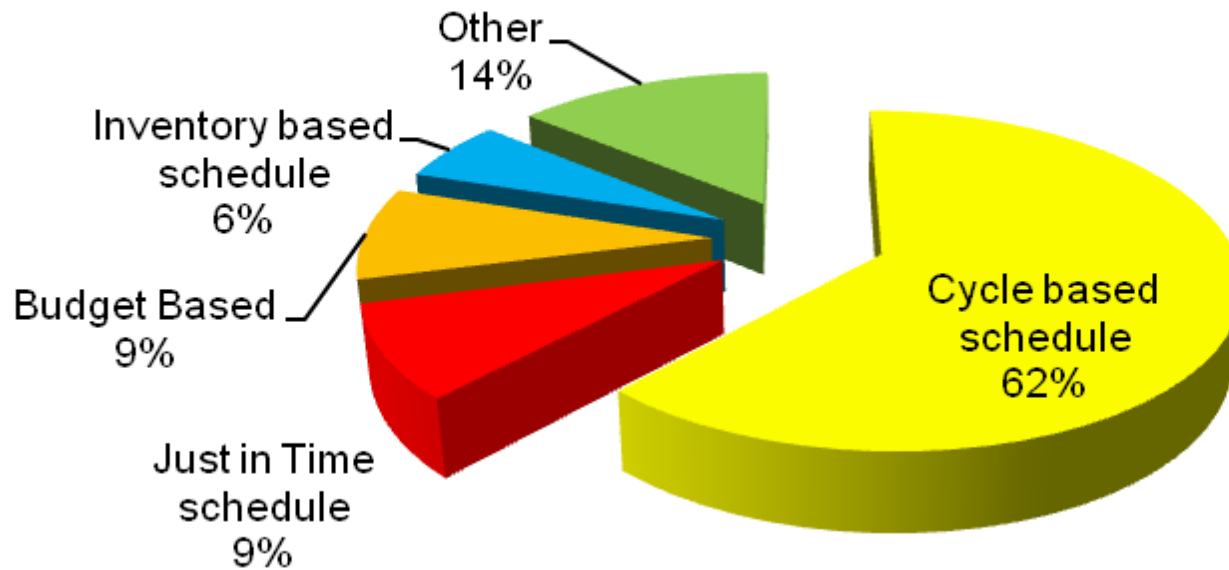
Question 2: What % of your ROWs are in need of reclaiming?



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# Benchmarking Vegetation Schedule Type

How would you generally describe your scheduling for routine Sub-Transmission/ Transmission Work?



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