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# ROW VEGETATION MANAGEMENT ALTERNATIVES: NET PRESENT VALUE OF COSTS CALCULATOR VERSION 1 USER'S GUIDE

## NARRATIVE

### INTRODUCTION

The Utility Arborist Association (UAA) is excited to share the *ROW Vegetation Management Alternatives Net Present Value (NPV) of Cost Calculator, Version 1*. The calculator is designed for vegetation managers to explore alternative vegetation management options using Integrated Vegetation Management (IVM) on their working lands. The calculator compares up to five alternative vegetation management scenarios, costed out over 10 years; calculations use a set discount rate and inflation determined by the user. The calculator can be used to prepare ROW vegetation management budget forecasts, evaluate contract models and bids, and build buy-in for best practices and the IVM approach—for single projects or an entire system. When we present an accurate and detailed picture of how a vegetation management budget will be allocated, along with collateral financial impacts, we can achieve the most influence on decisions aimed at increasing efficiency and efficacy of vegetation management activities.

### WHAT IS THE NET PRESENT VALUE OF COSTS CALCULATOR?

The NPV calculator represents the present value of all future cash flows for vegetation management activities. Because the time-value of money dictates that money is worth more now than it is in the future, the value of a vegetation management future cash flows must be discounted because the money outflows or offset in the future is worth less today.

The NPV calculator applies the chosen inflation rate and expected investment return to evaluate future vegetation management outflows, inflows, and cost offsets in today's dollars. This calculator is designed to calculate vegetation management costs over time and compare alternate vegetation management activities to determine which is the most cost effective over time. Placeholders for indirect cost outflows and inflows—such as legal expenses, customer relations, property licenses, and capital project impacts—are built into the template. Analysis of the NPV may be for least cost, for most effective, or for a business case reviewing a combination of budget and other business risks and opportunities to select the course forward.

## WHAT IS INTEGRATED VEGETATION MANAGEMENT?

IVM is generally defined as the systematic practice of promoting compatible, stable, low-growing plant communities—that will resist invasion by tall-growing tree species—through the use of appropriate, environmentally sound, and cost-effective control methods. Adopted as ANSI A300 (Part 7) in 2018, IVM is the industry standard accepted by regulators, public agencies, nongovernmental organizations, and academics. IVM can be viewed as a system based on a continuous cycle of information gathering, planning, implementing, reviewing, and improving vegetation management treatments and the related actions that a utility might undertake to meet its business and environmental needs.

Employing IVM in utility ROWs results in a variety of benefits, including increased safety for the operation, increased economic performance, increased regulatory compliance, improved environmental outcomes, improved stakeholder relations, and increased employee satisfaction.

## TOOL ASSUMPTIONS AND GUIDANCE

The following assumptions are based on the authors experience as well as research on decreasing ROW vegetation management maintenance costs under programmatic IVM as published in Goodfellow and Nowak 2018, Goodfellow and Charlton 2019, a Corteva AgroSciences white paper, and more than 30 research publications from the Pennsylvania Game Commission. Contact the UAA for help locating these references if needed.

### Assumptions

- This template and the proportion of costs use **assumed relative cash flows** for the scenarios.
- Financial **metrics** reflect the impacts to maintenance budget only.
  - Any enterprise-wide impacts of capitalization and asset values must be considered separately by the user.
- **Placeholders are set up** in the top summary tables of all Alternative Management Data tabs for projects with **initial values assigned to assets**, and for a capitalization value.
  - These cells are *not* included in any formulas for the tool as presented.
- **Flat rate** and **cost inflation** are accounted for at the bottom of each section—not by specific service/asset costs.
- **Sample budgets originally set in the publicly available tool** estimate relative outflows and budget offsets for full system work and are condensed for convenience into a 10-year project period.
- Establishing an IVM program often requires an early investment in initial mechanical clearing and herbicide treatment during or shortly after. Although initially more expensive, IVM often becomes the low-cost option.

## Guidance

- **If applying the tool to a single corridor or annual cycle work area**, enter zeros for years and methods where reclamation costs are not incurred and when maintenance work is not completed.
- **Professional services** support ROW vegetation management during routine **operations and maintenance**, in capital projects, and with changes to vegetation management program and policies. Examples are
  - ROW acquisition and expansion of rights
  - Public/political/community outreach
  - Messaging
  - Partnership development
  - Regulatory contacts and support
  - Permitting
  - Internal and contractor communication
  - Training
  - Updating of policies and procedures
  - Risk management as forecasted by user's system owner/operator
  - **Net present cost vs. net present value**: One is simply the opposite of the other. Use (-) for net present cost and (+) for net present value

## NOTES

*Variables for users to enter based on their analysis are in green cells. Calculation and results cells are white, and they are locked.*

*Next-generation NPV versions may be developed to allow using units and unit prices for users with access to system management units and contract rate data.*

## TAB DESCRIPTIONS & INSTRUCTIONS

### UNIT DESCRIPTIONS FOR THIS CALCULATOR

- **Discount rate:** The rate of interest that a central bank charges on its loans and advances to a commercial bank.
- **Inflation rate:** The rate of increase in prices over a given period of time.
- **Net present value:** The difference between the present value of cash inflows and the present value of cash outflows over a period of time.

**The tool is set up to view the net present cost as a positive budget; therefore, the lowest calculated net present value of outflows is the lowest budget.**

**“To Present as Net Present Cost”** uses (–) in final calculations.

In all tabs and cells, green indicates manual entry by user, and white indicates a locked calculation cell.

#### **Tab 2: Summary Financial Comparisons (see flowchart)**

- Sets vegetation management program discount rate, study period, inflation rate, status quo, and alternatives.
- Presents the financial metrics from each alternative management approach tab with data.
- Tab 2 allows you to manually enter/overwrite variables—unique to your analysis—in the green cells.
- The chart at the bottom compares the annual budget and trends budgets for the alternatives.
- Summary Financial Comparisons will autofill after Status Quo and at least one alternative variable are filled in, and it will generate the subtotals and totals fields.

#### **Tab 3: Calculations (see flowchart)**

- No manual entry required.
- Top table is the basis for information presented in Tab 2.
- Bottom table runs the comparison of change in costs for each approach compared to the status quo, and it accounts for cashflow impact based on the time-value of money.

#### **Tab 4: Status Quo Management (“SQ Mgmt.”) (see flowchart)**

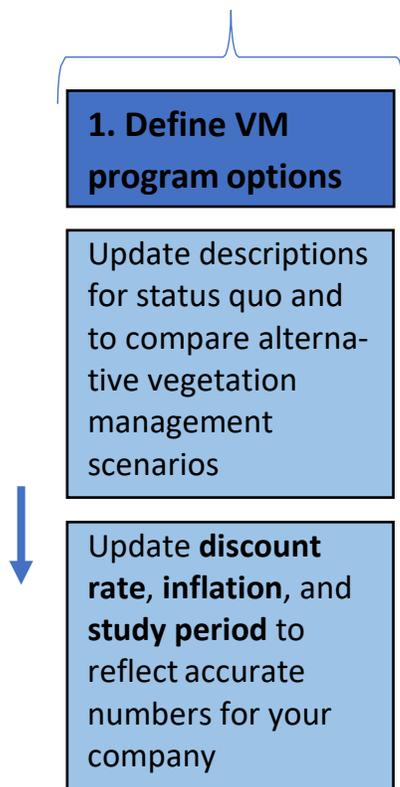
- Adjust labels for maintenance budget as needed.
- Retain original classifications and spreadsheet position of outflows and inflows.
- Populate green cells for maintenance budget, along with the number of study years chosen and entered in Tab 2 (using total annual amounts, in thousands).
- Enter capitalization percentage in green cell near top left of each the management tabs.
  - This percentage will be applied to columns B and C (investments made in ROW management alternatives). The result is used *only* as an offset to the maintenance budget.
  - Capitalization amounts and financial impacts vary for each owner/operator/business model and are subject to change according to market and regulation.

### Tabs 5–9: Alternative Management

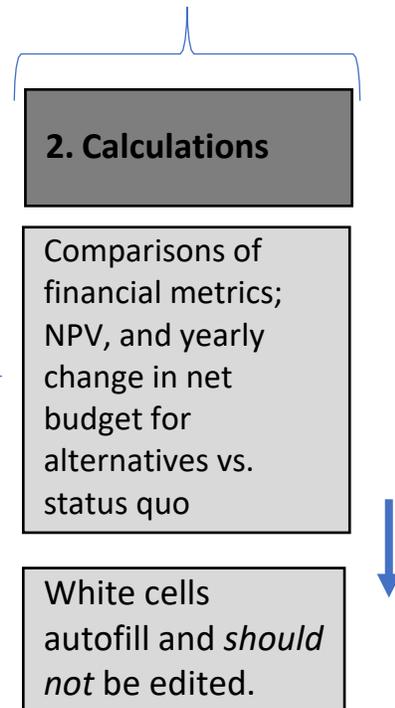
- Populate green cells for **maintenance budget** the **number of study years** chosen and entered in Tab 2 (using total annual amounts, in thousands) based on alternative management costs.
- Enter capitalization percentage in green cell near top left of each the management tabs.
  - This percentage will be applied to columns B and C (investments made in ROW management alternatives). The result is used *only* as an offset to the maintenance budget.
  - Capitalization amounts and financial impacts vary for each owner/operator/business model and are subject to change according to market and regulation.

### USING NPV COST CALCULATOR: FLOW CHART FORMAT

**Tab 2:** Summary Financial Comparisons



**Tab 3:** Calculations



**Tab 4: Summary Financial Comparisons**

