

IWR PLANNING SUITE II

PCoP WEBINAR SERIES

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3 October 2019



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WEBINAR TOPICS

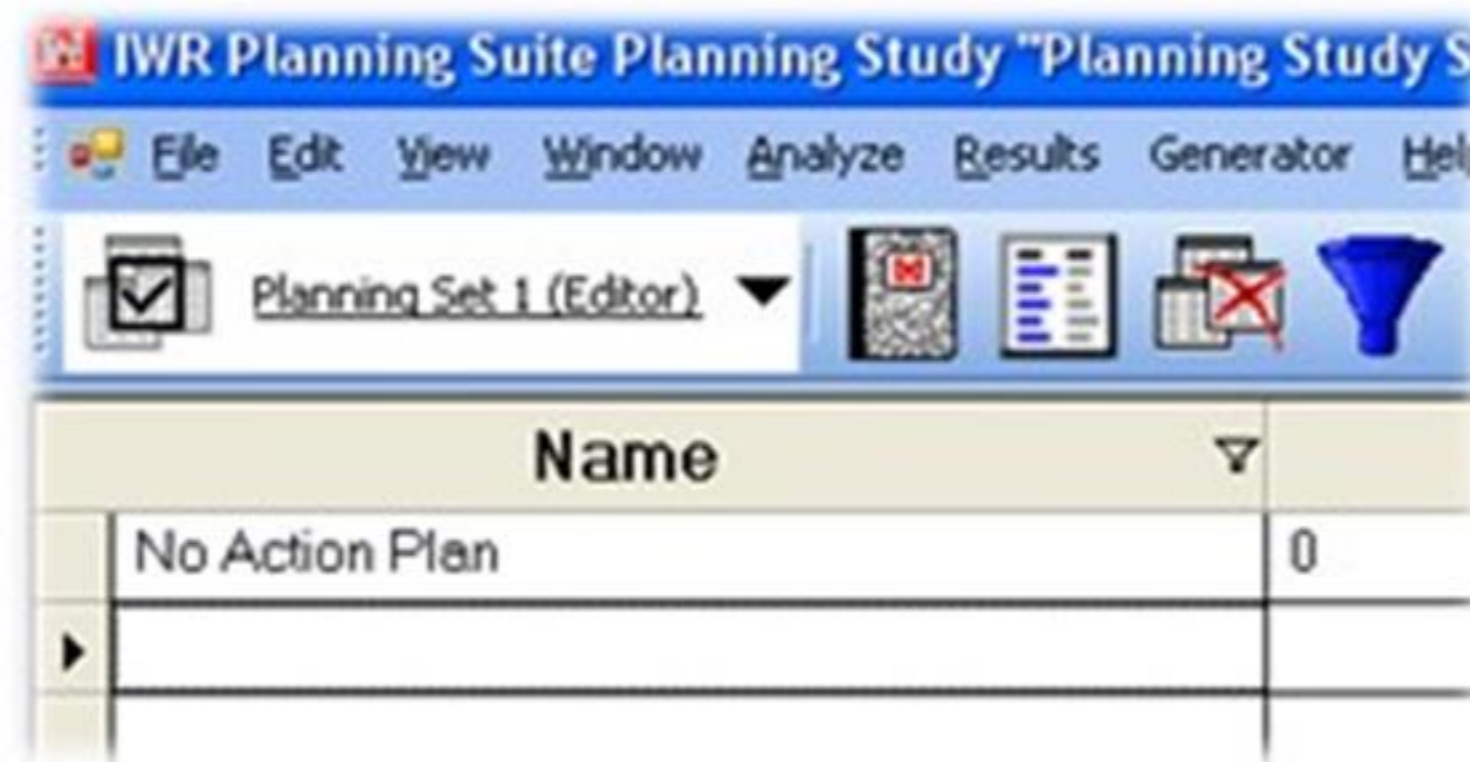
- IWR Planning Suite II
 - Background
 - What's New - A Refresher
- MCDA Module
 - Analysis - the "A" in MCDA
 - Uses and Relevance – An Overview
 - Weighting Options
 - Ranking Options
 - Charts and Graphics
- MCDA Module Mechanics
 - Simple Worked Example
 - Related Applications
- Where can I get the software?
- Training resources & help



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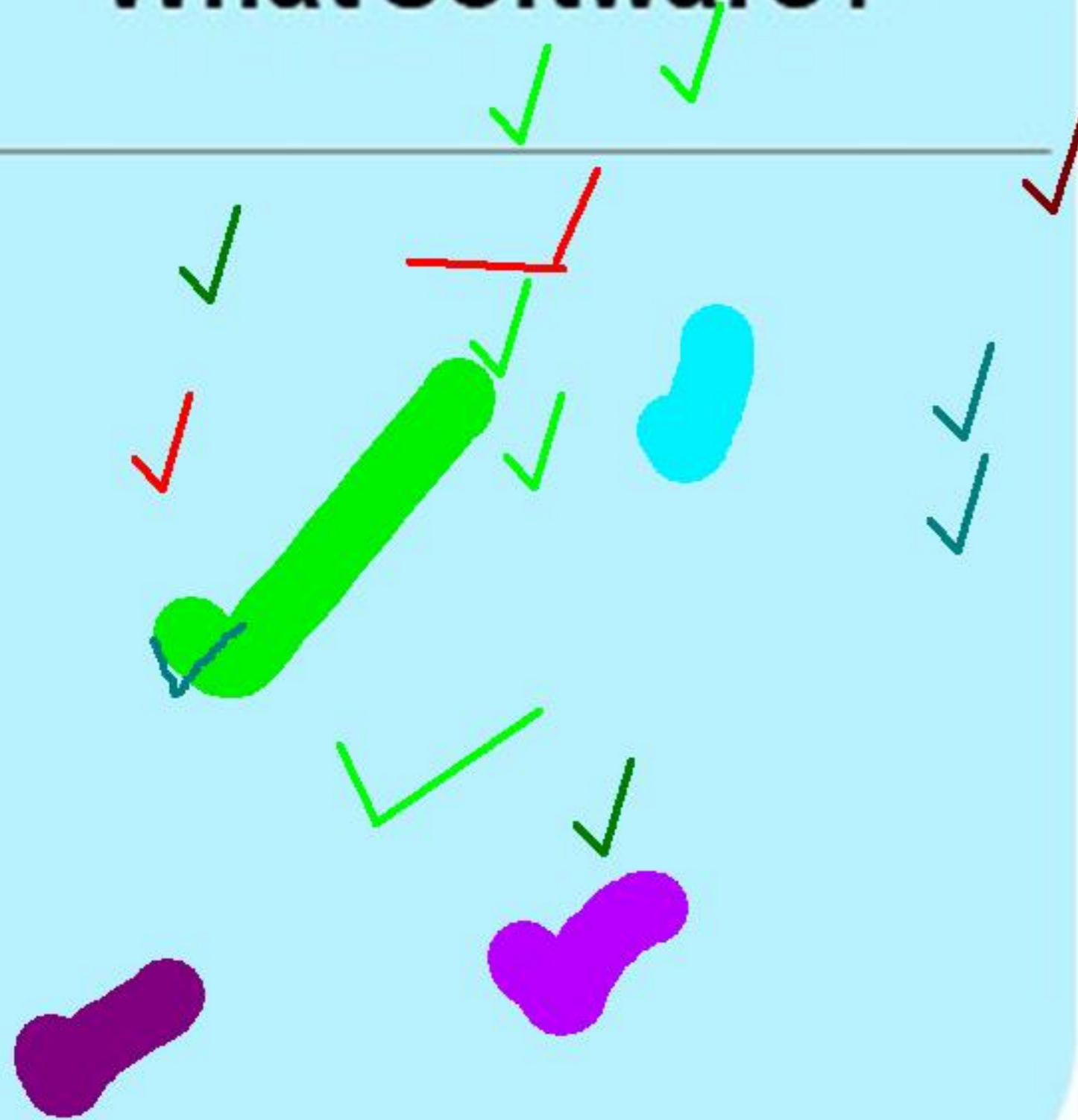
WHAT EXPERIENCE DO YOU HAVE WITH IWR PLANNING SUITE?



What software?

I've used a previous version of the software.

I've used the latest version of the software.



BACKGROUND: INFORMATION

- 31-MAY-2018 CECW-P Memorandum to Director of ECO-PCX concerning National Certification for Institute for Water resources Planning Suite II
 - All review plans approved after date of memorandum must show use of the latest version of the IWRPS II.
 - Migration to IWRPS II also required for ongoing studies that had not scheduled a TSP meeting as of the date of the memorandum.
 - Exemptions might be granted or ongoing studies (case by case)
 - Studies electing use of MCDA should engage the ECO-PCX to develop a strategy for appropriate and policy compliant use of the module.
- ER 1105-2-100 (Planning Guidance Notebook)
 - Provides instruction for NED and NER methods
 - Provides instruction on use of CE/ICA during selection of NER plan and for all recommended mitigation plans
- IWR Planning Suite Users' Guide
<https://publibrary.planusace.us/document/5641c105-449e-4b7f-c52f-af91a15a99e2>



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BACKGROUND: USACE-CERTIFIED VERSIONS OF THE SOFTWARE

- Version 1.0.11.1
 - Plan Generator and CE/ICA
 - Derived Value Calculator/Module
- Version 2.0.6.1
 - Plan Generator and CE/ICA
 - Derived Value Calculator/Module
 - Added the Annualizer Module
- **Version 2.0.9 aka IWR Planning Suite II (subject of 31-MAY-2018 CECWP Certification memorandum)**
 - Updated Interface
 - Plan Generator and CE/ICA
 - Derived Value Calculator/Module
 - Annualizer Module
 - Added MCDA, Uncertainty, and Watershed Modules



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BACKGROUND: PURPOSES OF IWR PLANNING SUITE II

- Support formulation, evaluation, and comparison of study alternatives involving non-monetary costs and benefits.
- Automate computations associated with Cost Effectiveness and Incremental Cost Analyses (CE/ICA)
- Facilitate documentation of CE/ICA, and reporting/visualization/charting of results
- Enable consideration of multiple variables, and assessment of uncertainty on CE/ICA results.
- Support calculation of:
 - Average annual benefits (for National Ecosystem Restoration (NER) plans),
 - Average Annual Equivalent costs and benefits (for National Economic Development (NED) plans)

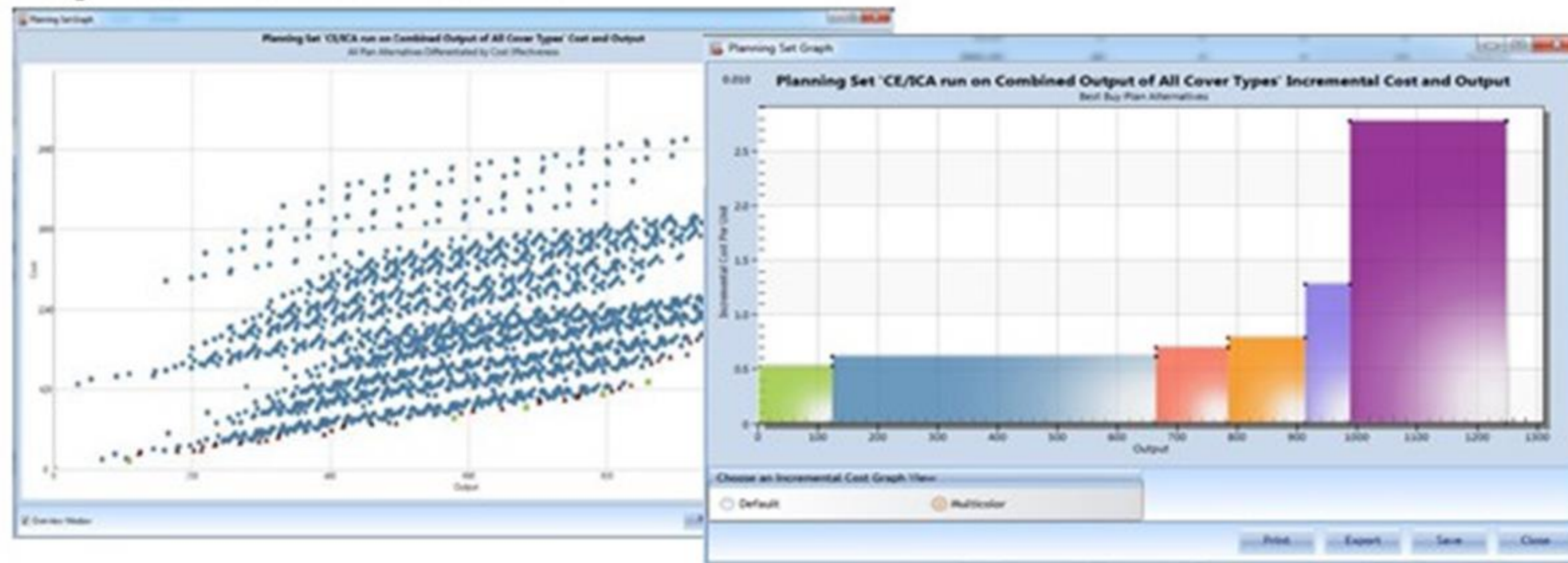


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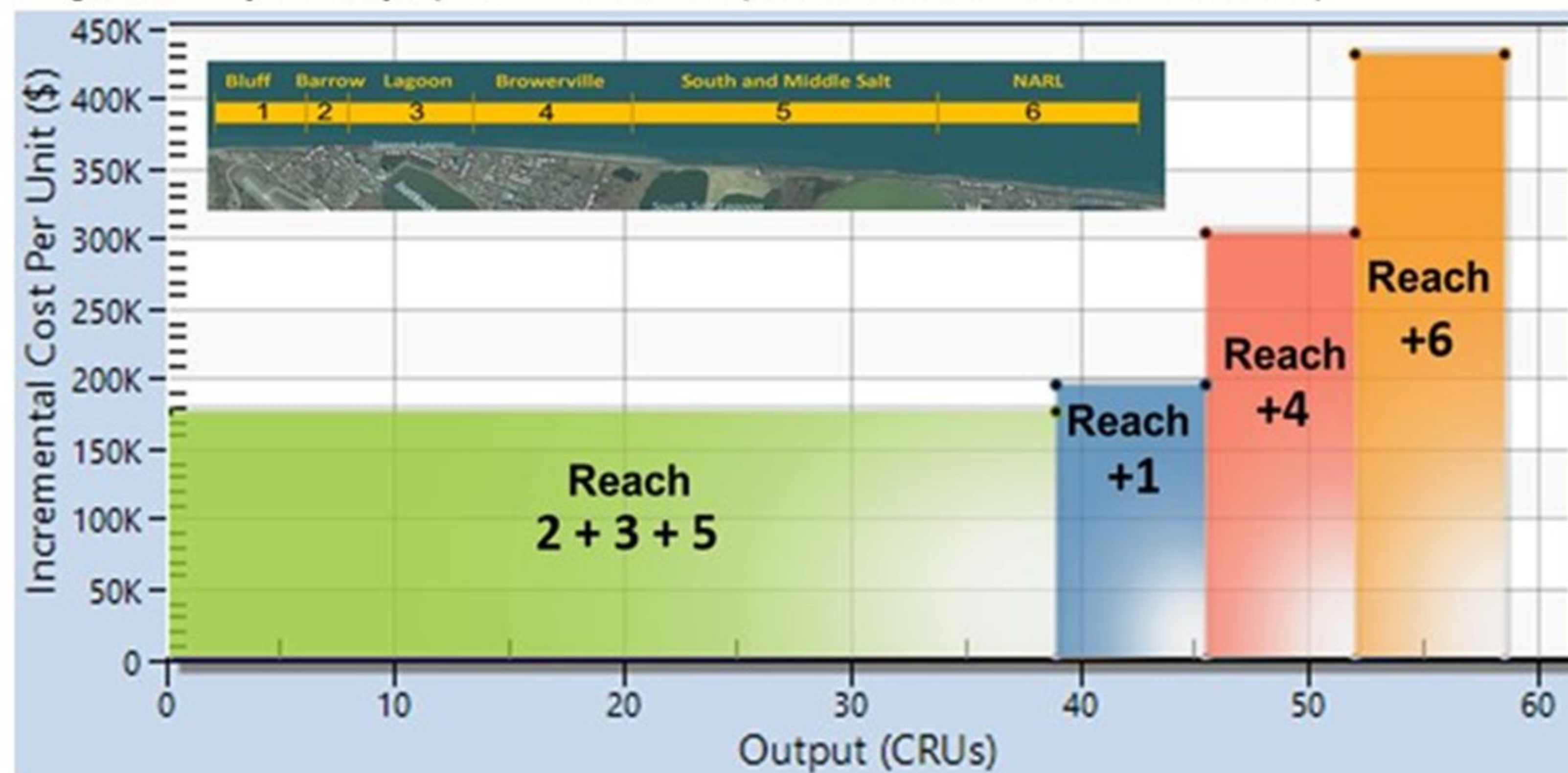
BACKGROUND: USES OF IWR PLANNING SUITE II

Images: from IWRPS II User's Guide



Ecosystem restoration outputs

Image: Courtesy of Cindy Upah, Alaska District (Barrow AK Coastal Erosion FS, ADM)



Other non-monetary outputs... e.g., Community Resiliency



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WHAT'S NEW: INTERFACE

The screenshot displays the IWR Planning Suite II software interface. The main window shows a table of planning sets with columns for Plan, Plan Description, Cost, EQ, HabitatQuality, HabitatQuantity, OSE, NED, and Cost Effective. The table lists seven plans: No Action Plan, Red Plan, Orange Plan, Yellow Plan, Green Plan, Blue Plan, and Indigo Plan. The Red Plan, Orange Plan, and Yellow Plan are marked as Non-Cost Effective, while the others are marked as Best Buy or Cost Effective.

Plan	Plan Description	Cost	EQ	HabitatQuality	HabitatQuantity	OSE	NED	Cost Effective
No Action Plan	Default No Action Plan	\$0.00	0	0	0	0	0	Best Buy
Red Plan	Hardened Shoreline - Extent A	\$800,000.00	30,000	0.3	100,000	0.4	1,100,000	Non-Cost Effective
Orange Plan	Hardened Shoreline - Extent B	\$1,200,000.00	25,000	0.25	100,000	0.6	1,500,000	Non-Cost Effective
Yellow Plan	Hybrid Shoreline - Extent A	\$850,000.00	78,000	0.65	120,000	0.4	1,250,000	Non-Cost Effective
Green Plan	Hybrid Shoreline - Extent B	\$115,000.00	98,000	0.7	140,000	0.55	1,800,000	Best Buy
Blue Plan	Restoration Alternative - Extent A	\$750,000.00	150,000	0.75	200,000	0.45	175,000	Cost Effective
Indigo Plan	Restoration Alternative - Extent B	\$1,000,000.00	176,000	0.8	220,000	0.5	200,000	Best Buy

The interface also includes a left-hand pane for 'Planning Sets' with a tree view showing 'User-Entered Sets' and 'Generated Sets'. Below this is the 'Planning Set Properties' pane, which displays information for the selected set: 'Simple Study Planning Set 1 CEICA 30'. The properties include Name, Description, HUC, Plan Count (7), Parent Set (Simple Study Planning Set 1), and a checkbox for 'Show plan-specific geographic information'. At the bottom of the interface, there are buttons for 'Discard All Changes' and 'Save Changes', and a status bar showing the current study name and version information (v2.0.9.1 9/27/2019).



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WHAT'S NEW: CAPABILITIES

Modules from Prior Versions

Plan Generation



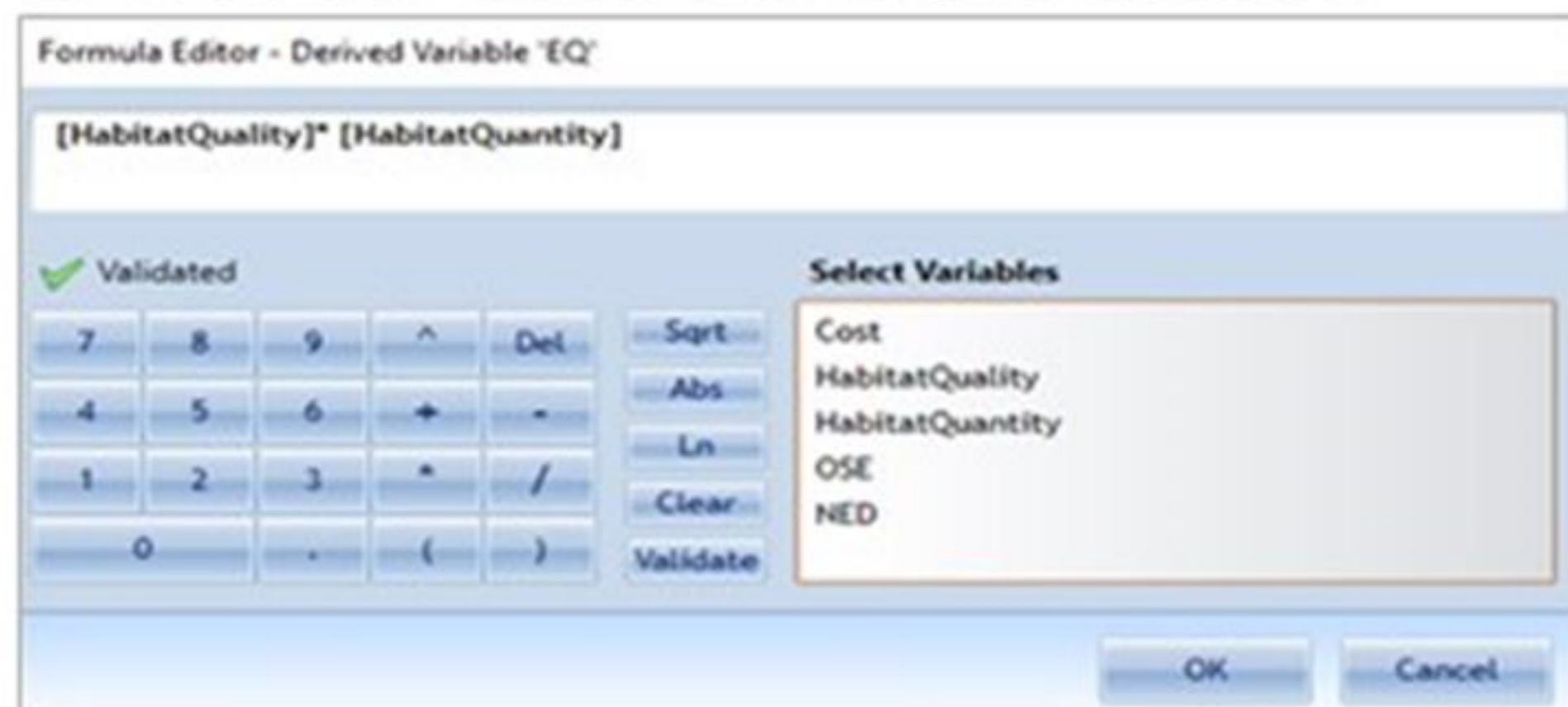
CE/ICA



Annualizer



Derived Values Calculator

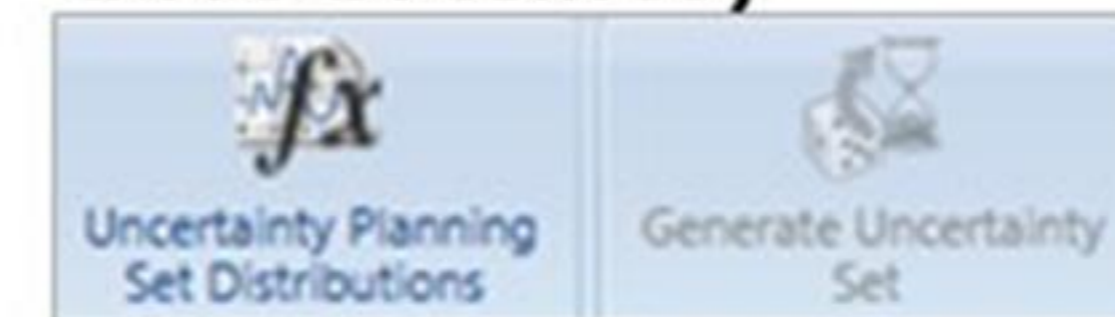


New Modules

Multi-Criteria Decision Analysis



Uncertainty



Watershed Wizard



Report Generator
Plan Generation Flexibilities
Database Structure



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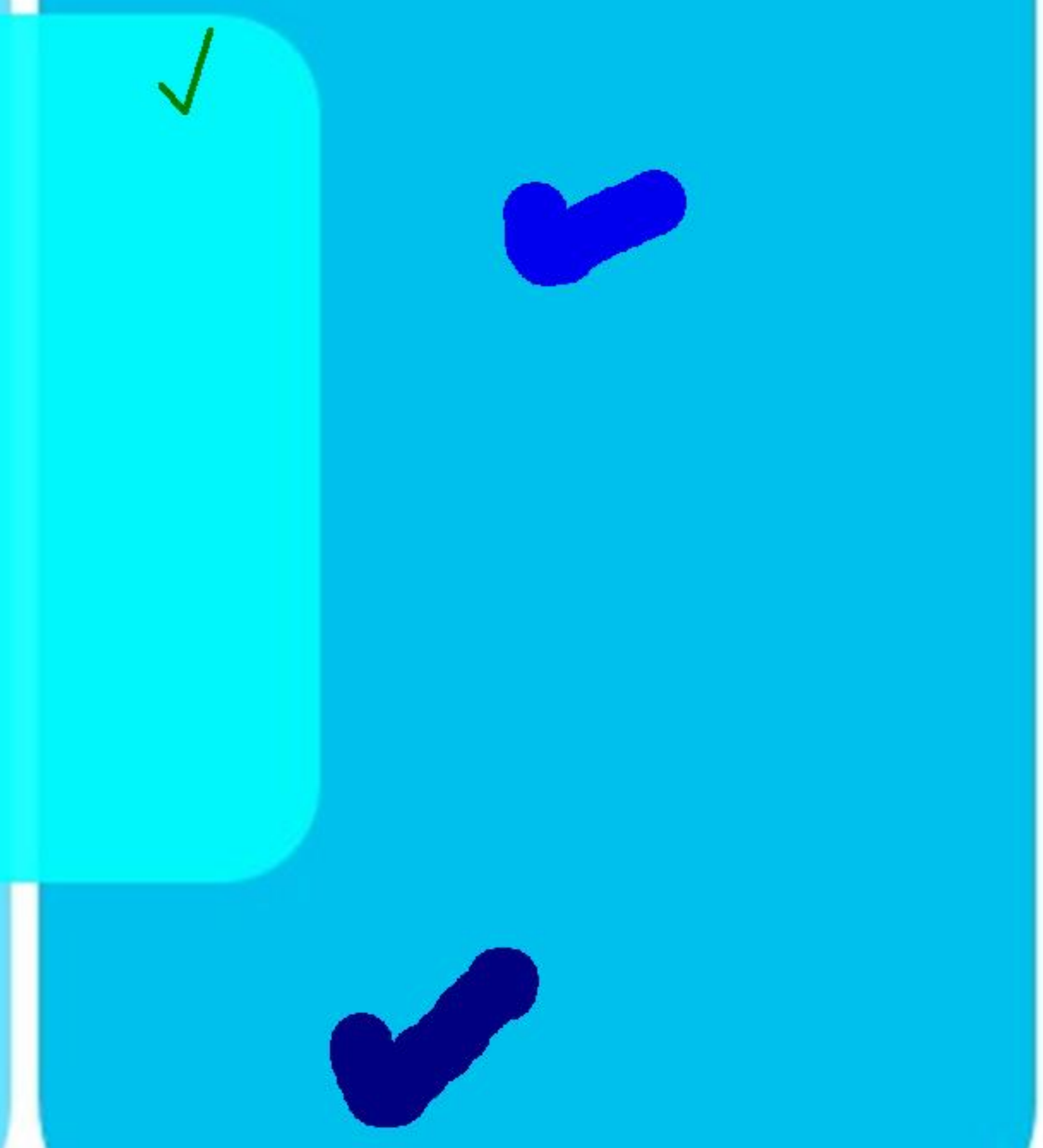
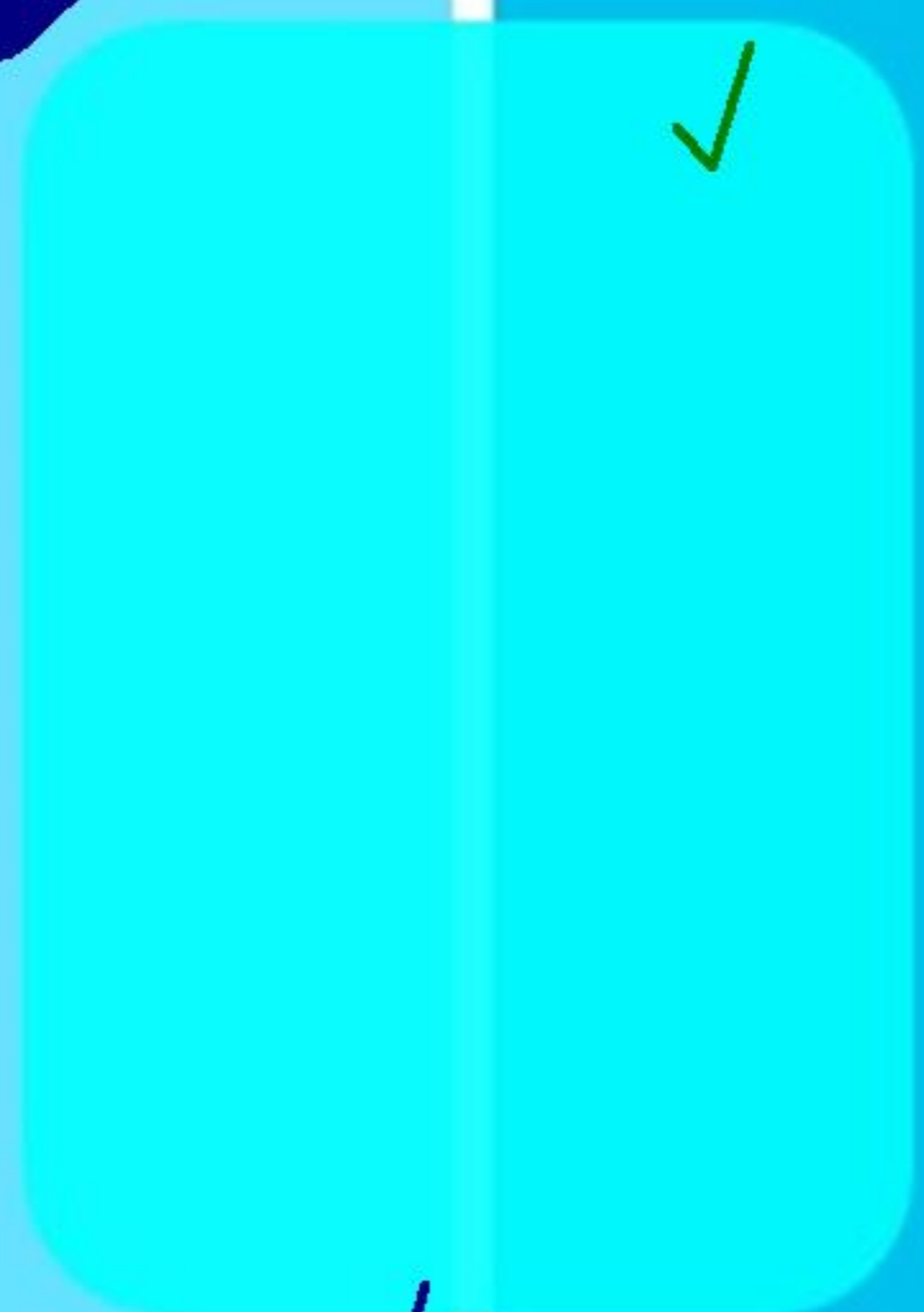
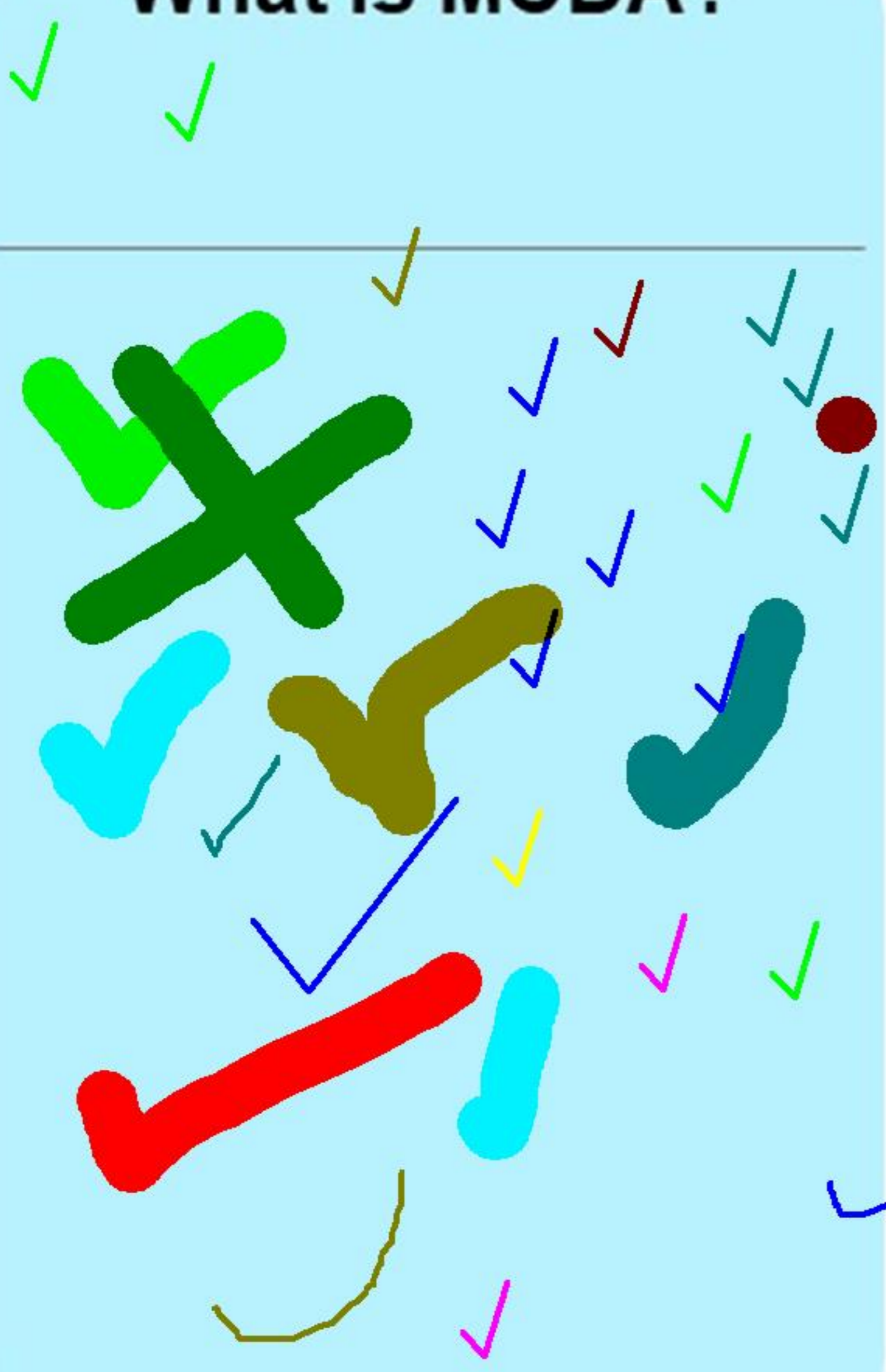


WHAT EXPERIENCE DO YOU HAVE WITH MULTIPLE CRITERIA DECISION ANALYSIS?

What is MCDA?

I have received training in MCDA techniques.

I have applied MCDA techniques in decision-making



MULTI CRITERIA DECISION ANALYSIS

One of many techniques for:

- Exploration, understanding, and disclosure of relationships between requirements, preferences, and decisions
- Revealing and communicating trade-offs between various economic, environmental, and social effects
- Assessing robustness and sensitivities of decisions to changes in planning assumptions and/or social preferences.

***Not a replacement for sound
planning/engineering judgment.***



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MULTI CRITERIA DECISION ANALYSIS

What sorts of questions might MCDA help to answer during execution of a study?

(Please provide responses as comments to all participants)



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MULTI CRITERIA DECISION ANALYSIS

Q: What would our decision look like if we placed more emphasis on gains in X?

Q: What would our decision look like if we sought to avoid more losses of Y?

Q: Which alternatives are insensitive to changes in preferences?

Q: Which factors are most influential on the ranking of alternatives being communicated to decision-makers?

ANALYSIS, UNDERSTANDING, DISCLOSURE
(NOT A DECISION-MAKING TECHNIQUE)



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MULTI CRITERIA DECISION ANALYSIS (MCDA): KEY CONCEPTS

Weighting

Expresses relative importance of each criterion

- A is two times as important as B
- B is two times as important as C
- C is ten times as important as D

Influences results of analyses

- Will changes in D matter to decision-makers?

Watch for inconsistency

- Can C be 2 times as important as A?

IWRPS II has capability to flag inconsistencies if present...



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MULTI CRITERIA DECISION ANALYSIS (MCDA): KEY CONCEPTS

Ranking

Uses provided weights and values of metrics for each criterion to place alternatives in an order.

- Which alternatives produce the most of desirable outcomes
- Which alternatives produce the least of undesirable outcomes
- Which alternatives balance each in accordance with expressed preferences/weights



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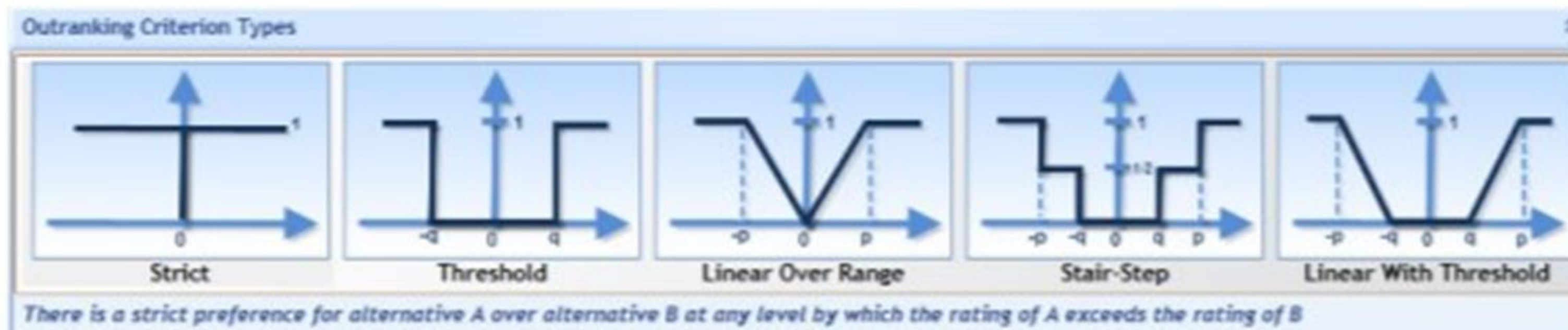
IWRPS-II MCDA MODULE: OPTIONS

Supported Weighting Techniques

- Direct Weighting
 - Simplest Method
 - Frequently used
- Saaty's Analytical Hierarchy Process Scale
 - Based on narratives / Helpful for collaborative settings
 - Identifies inconsistencies / Helpful check on quality

Supported Ranking Technique

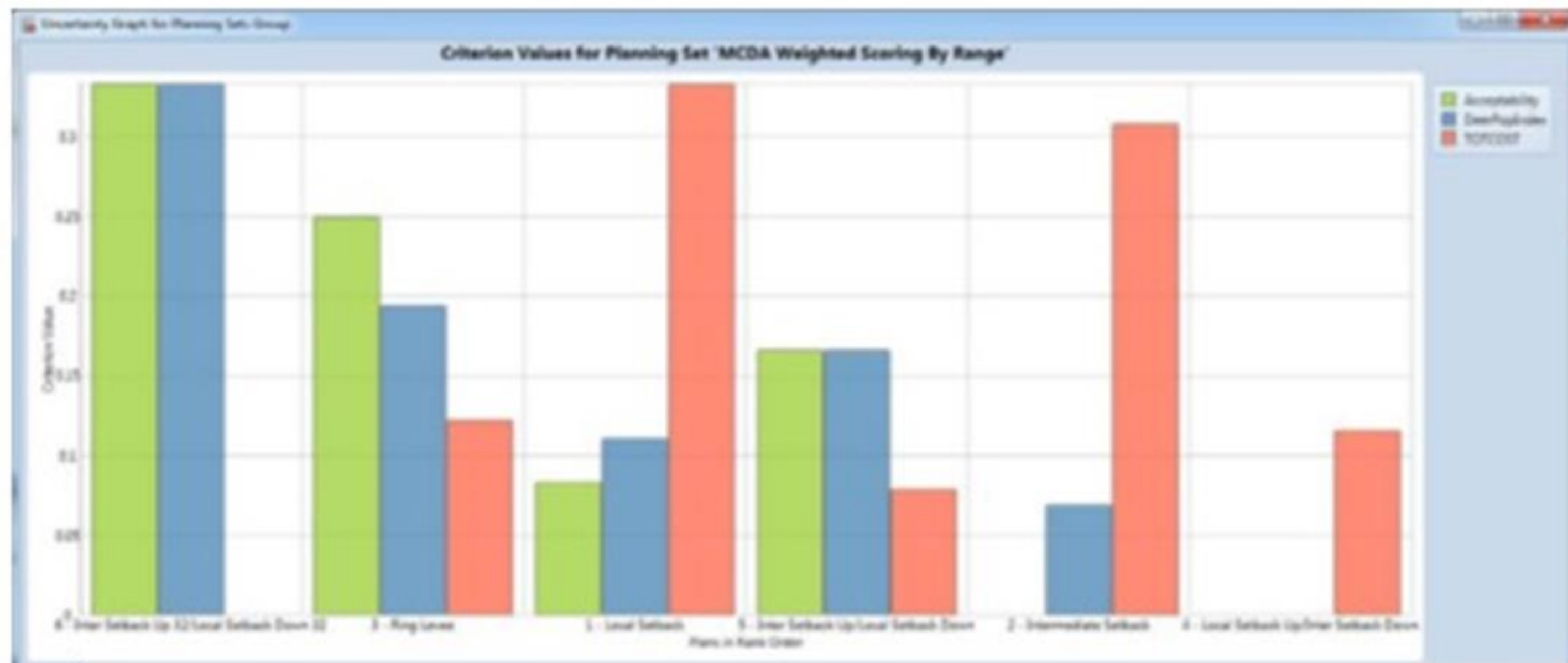
- Weighted Scoring – Direct/Intuitive method
- Efficiency Frontier – Direct/Intuitive method
- Compromise Programming – Exploration of "Best Overall" plans
- PROMETHEE (Preference Ranking Organization Method for Enrichment Evaluations) – "Outranking" technique / Most complex



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IWRPS-II MCDA MODULE: REPORTING



Charts

MCDA Planning Set Report - Actual Criterion Values

10/13/2014

MCDA Outranking

Ranking Method:

Criteria	Weight	Optimization	Criterion Type	Indifference Value	Absolute Preference
Acceptability	1.00	Maximized	Strict	0.00	0.00
DeerPopIndex	1.00	Maximized	Strict	0.00	0.00
TOTCOST	1.00	Maximized	Strict	0.00	0.00

Rank	Name	Score	Acceptability	DeerPopIndex	TOTCOST
6	1 - Local Setback	-0.3333	2.0000	53.0000	1000.0000
5	2 - Intermediate Setback	-0.2667	1.0000	56.0000	1200.0000
4	3 - Ring Levee	-0.0667	4.0000	47.0000	2700.0000
3	4 - Local Setback Up/Inter Setb	0.1333	1.0000	61.0000	2750.0000
2	5 - Inter Setback Up/Local Setb	0.2000	3.0000	49.0000	3048.0000
1	6 - Inter Setback Up 32/Local S	0.3333	5.0000	37.0000	3687.0000

Tables and Reports



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IWRPS-II MCDA MODULE: SIMPLE WORKED EXAMPLE

The screenshot displays the IWRPS-II MCDA Module software interface. The main window has a ribbon with tabs for Home, Generator, Uncertainty, MCDA, and Tools. The Home tab is active, showing a ribbon with icons for Properties, Constraints, Delete, Create New User-Entered Set, Perform CE/ICA, Graphs & Reports, and Report Builder. A left-hand menu contains options like New..., Open..., Delete..., Close..., Save As..., Export, Optimize Database, Select Default Data Directory..., Print Preview..., Print..., and Exit. A 'New Planning Study' dialog box is open in the center, with the following fields and buttons:

- Study Name: Simple Study (Callout 3)
- Database Name: SimpleStudy (Callout 3)
- Current Project Directory: C:\Users\jq0iwrsk\Documents\UWR Planning Suite II (2.0.9.1) Studies
- Buttons: Choose Project Directory... (Callout 4), Open (Callout 5), Cancel

At the bottom of the main window, there are 'Discard All Changes' and 'Save Changes' buttons. The status bar at the bottom right shows the version 'v2.0.9.1' and the date '9/27/2019'. The U.S. Army logo is in the bottom right corner.

IWRPS-II MCDA MODULE: PROPERTIES

The screenshot displays the IWR Planning Suite II software interface. The ribbon includes tabs for Home, Generator, Uncertainty, MCDA, and Tools. The 'MCDA' tab is active, showing a 'Create New User-Entered Set' button circled in red and labeled '6'. A red dashed line connects this button to the 'EQ' variable in the 'Variables' table of the 'Planning Study [Simple Study] Properties' dialog box. The dialog box has a 'Name' field with 'Simple Study' (labeled '2') and a 'Description' field with 'Simple example of a potential planning study CE/IC analysis to demonstrate mechanics of the IWRPS-II.' (labeled '3'). The 'Variables' table lists several variables, with 'EQ' highlighted in yellow (labeled '4'). The 'Attributes' table at the bottom lists various attributes, with the 'Visible' column for 'Plan of Interest' set to 'Never' (labeled '5'). The 'OK' and 'Cancel' buttons are at the bottom right. The status bar shows 'Simple Study' and 'v2.03.1 9/27/2019'. The U.S. Army logo is in the bottom right corner.

1 Properties & Attributes

2 Name: Simple Study

3 Description: Simple example of a potential planning study CE/IC analysis to demonstrate mechanics of the IWRPS-II.

4 Variables table:

Name	Units	Description	Variable Type	Derived	Derived Function	Minimum
Cost	\$1000	Average Annual Cost in \$1000s	Currency	<input type="checkbox"/>		
EQ	AAHUs	Output in Average Annual Habitat Units	Decimal	<input checked="" type="checkbox"/>	[HabitatQuality]* [HabitatQuantity]	
HabitatQuality	Index	Quality of Affected Habitat (Index 0.00 to 1.00)	Decimal	<input type="checkbox"/>		
HabitatQuantity	Acres	Total Affected Habitat Acreage	Decimal	<input type="checkbox"/>		
OSE	Index	Net Benefit Realized by Affected Population(s)	Decimal	<input type="checkbox"/>		
NED	Net Benefit	Net Economic Benefits	Decimal	<input type="checkbox"/>		

5 Attributes table:

Name	Type	Description	Visible
Plan of Interest	Yes/No	Plan of Interest	Never
Show Custom Label	Yes/No	If true, the custom label will be displayed on charts.	Never
Cost Effective	Integer	Non-Cost Effective, Cost Effective, or Best Buy	CE/ICA Analysis

IWRPS-II MCDA MODULE: INPUTS

The screenshot displays the IWR Planning Suite II software interface, specifically the MCDA (Multi-Criteria Decision Analysis) module. The interface is divided into several sections:

- Top Ribbon:** Contains tabs for Home, Generator, Uncertainty, MCDA, and Tools. Below the tabs are icons for various functions: Properties & Attributes, Variable Sensitivity, Generator, Uncertainty, MCDA, Properties, Constraints, Delete, Create New User-Entered Set, Perform CE/ICA, Graphs & Reports, and Report Builder.
- Left Sidebar:** Shows a tree view of Planning Sets. Under 'User-Entered Sets', 'Simple Study Planning Set 1' is selected and highlighted with a red box and a yellow circle containing the number 1.
- Main Table:** A table with 8 columns: Plan, Plan Description, Cost, EQ, HabitatQuality, HabitatQuantity, OSE, and NED. The 'Indigo Plan' row is highlighted in yellow and enclosed in a green box with a yellow circle containing the number 2. The table data is as follows:

Plan	Plan Description	Cost	EQ	HabitatQuality	HabitatQuantity	OSE	NED
No Action Plan	Default No Action Plan	\$0.00	0	0	0	0	0
Red Plan	Hardened Shoreline - Extent A	\$800,000.00	30,000	0.3	100,000	0.4	1,100,000
Orange Plan	Hardened Shoreline - Extent B	\$1,200,000.00	25,000	0.25	100,000	0.6	1,500,000
Yellow Plan	Hybrid Shoreline - Extent A	\$850,000.00	78,000	0.65	120,000	0.4	1,250,000
Green Plan	Hybrid Shoreline - Extent B	\$115,000.00	98,000	0.7	140,000	0.55	1,800,000
Blue Plan	Restoration Alternative - Extent A	\$750,000.00	150,000	0.75	200,000	0.45	175,000
Indigo Plan	Restoration Alternative - Extent B	\$1,000,000.00	176,000	0.8	220,000	0.5	200,000
- Bottom Left:** 'Planning Set Properties' section. 'Name' is 'Simple Study Planning Set 1', 'Description' is 'Worked Example', and 'HUC' is empty. 'Plan Count' is 7. There is a checkbox for 'Show plan-specific geographic information' which is unchecked.
- Bottom Right:** A 'Save Changes' button is highlighted with a red box and a yellow circle containing the number 3. A 'Discard All Changes' button is also visible.
- Bottom Status Bar:** Shows 'Simple Study [Simple Study Planning Set 1]', version 'v2.0.9.1', and date '9/27/2019'. The U.S. Army logo is in the bottom right corner.

IWRPS-II MCDA MODULE: CE/ICA

The screenshot displays the IWR Planning Suite II interface. The ribbon includes the 'Perform CE/ICA' button, highlighted with a red box and a yellow circle containing the number 1. A dialog box titled 'Perform CE/ICA Analysis' is open, showing the following details:

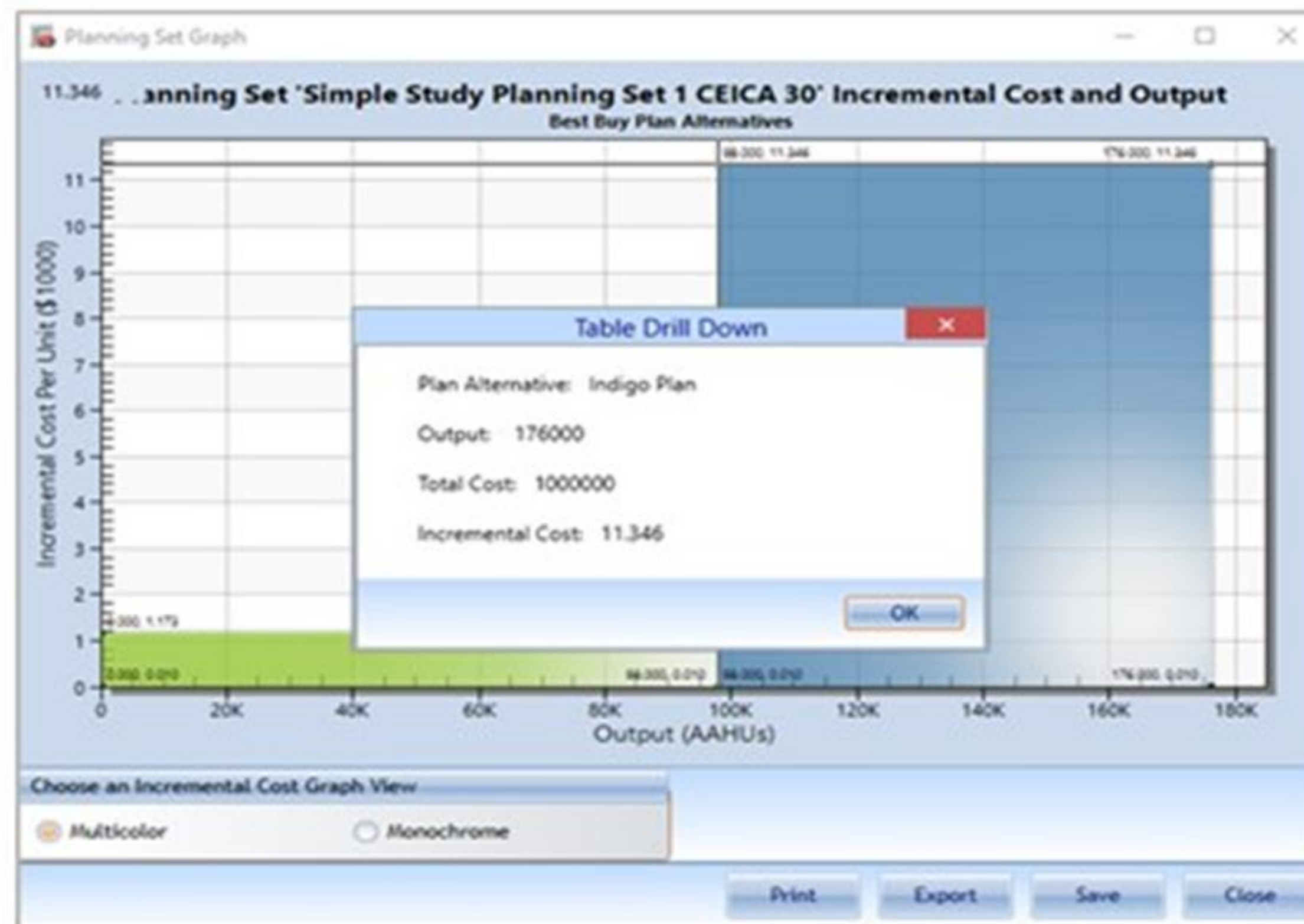
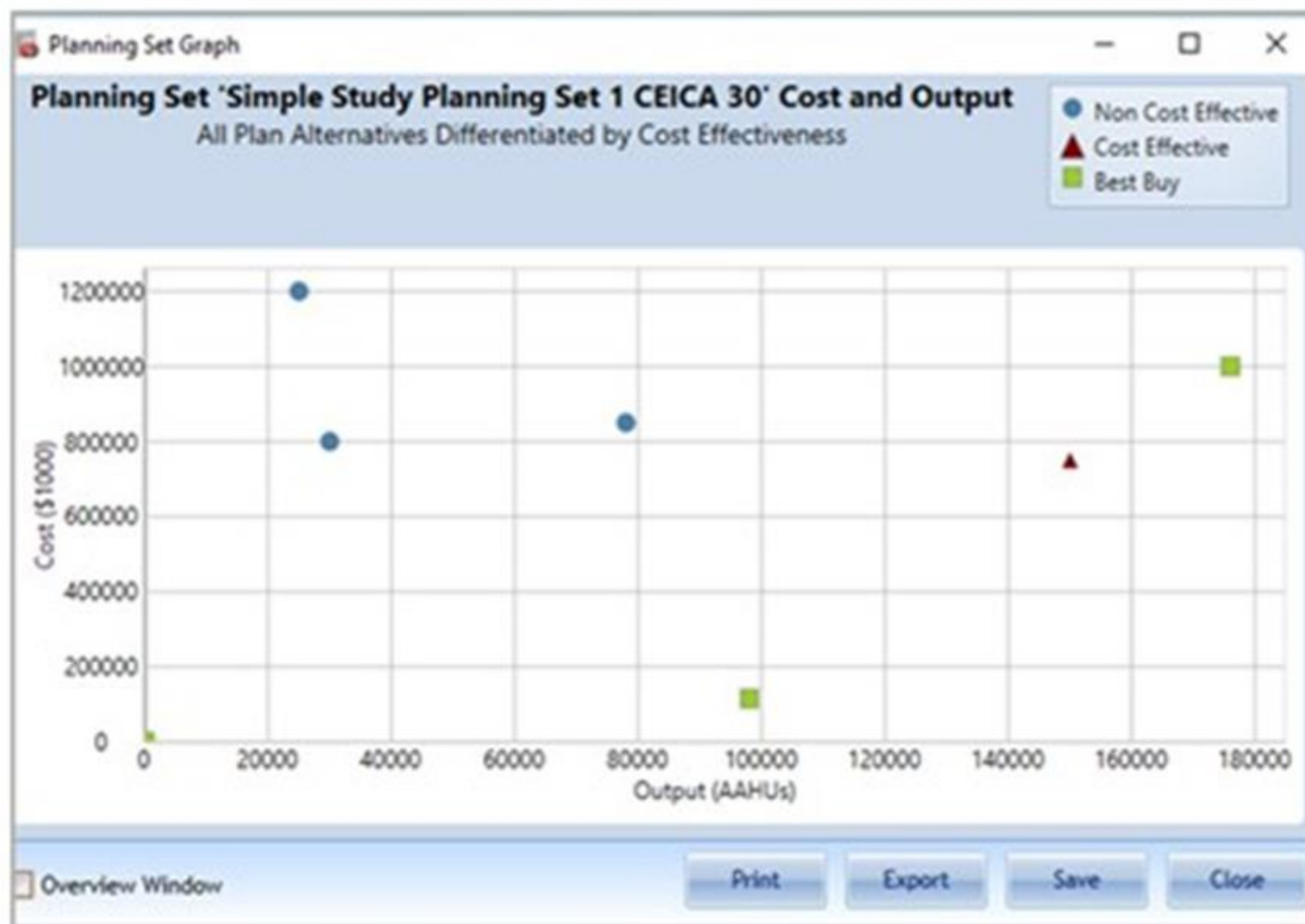
- Parent Set: Simple Study Planning Set 1
- Name: Simple Study Planning Set 1 CE/ICA 30
- Description: Planning set generated by Cost Effective/Incremental Cost Analysis
- CE/ICA Variables:
 - Cost Variable: Cost (3)
 - Output Variable: EQ (4)

The 'Analyze' button is highlighted with a red box and a yellow circle containing the number 5. A table of planning sets is visible in the background:

Plan	Plan Description	Cost	EQ	HabitatQuality	HabitatQuantity	OSE	NED
No Action Plan	Default No Action Plan	\$0.00	0	0	0	0	0
Red Plan	Hardened Shoreline - Extent A	\$800,000.00	30,000	0.3	100,000	0.4	1,100,000
Orange Plan					100,000	0.6	1,500,000
Yellow Plan					120,000	0.4	1,250,000
Green Plan					140,000	0.55	1,800,000
Blue Plan					200,000	0.45	175,000
Indigo Plan					220,000	0.5	200,000

The bottom of the interface shows the 'Simple Study [Simple Study Planning Set 1]' status bar, the version 'v2.0.9.1', the date '9/27/2019', and the U.S. Army logo.

IWRPS-II MCDA MODULE: CE/ICA RESULTS



Plan	Plan Description	Cost	EQ	HabitatQuality	HabitatQuantity	OSE	NED	Cost Effective
No Action Plan	Default No Action Plan	\$0.00	0	0	0	0	0	Best Buy
Red Plan	Hardened Shoreline - Extent A	\$800,000.00	30,000	0.3	100,000	0.4	1,100,000	Non-Cost Effective
Orange Plan	Hardened Shoreline - Extent B	\$1,200,000.00	25,000	0.25	100,000	0.6	1,500,000	Non-Cost Effective
Yellow Plan	Hybrid Shoreline - Extent A	\$850,000.00	78,000	0.65	120,000	0.4	1,250,000	Non-Cost Effective
Green Plan	Hybrid Shoreline - Extent B	\$115,000.00	98,000	0.7	140,000	0.55	1,800,000	Best Buy
Blue Plan	Restoration Alternative - Extent A	\$750,000.00	150,000	0.75	200,000	0.45	175,000	Cost Effective
Indigo Plan	Restoration Alternative - Extent B	\$1,000,000.00	176,000	0.8	220,000	0.5	200,000	Best Buy



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IWRPS-II MCDA MODULE: MCDA SETUP

IWR Planning Suite II

Home Generator Uncertainty **MCDA** 1

Weights, Ranking & Analysis 2 Graphs & Reports

Planning Sets

- User-Entered Sets
 - Simple Study Planning Set 1
- Generated Sets
- Uncertainty Sets
- Watershed Sets

Plan	Plan Description	Cost	EQ	HabitatQuality	HabitatQuantity	OSE	NED
No Action Plan	Default No Action Plan	\$0.00	0	0	0	0	0
Red Plan	Hardened Shoreline - Extent A	\$800,000.00	30,000	0.3	100,000	0.4	1,100,000
Orange Plan	Hardened Shoreline - Extent B	\$1,200,000.00	25,000	0.25	100,000	0.6	1,500,000
Yellow Plan	Hybrid Shoreline - Extent A	\$850,000.00	78,000	0.65	120,000	0.4	1,250,000
Green Plan	Hybrid Shoreline - Extent B	\$115,000.00	98,000	0.7	140,000	0.55	1,800,000
Blue Plan	Restoration Alternative - Extent A	\$750,000.00	150,000	0.75	200,000	0.45	175,000
Indigo Plan	Restoration Alternative - Extent B	\$1,000,000.00	176,000	0.8	220,000	0.5	200,000

Planning Set Properties

Planning Set Information:

Name: Simple Study Planning Set 1

Description: Worked Example

HUC: Apply

Plan Count: 7

Parent Set:

Show plan-specific geographic information

Discard All Changes Save Changes

Simple Study [Simple Study Planning Set 1] v2.0.9.1 9/27/2019

IWRPS-II MCDA MODULE: MCDA SETUP

The screenshot displays the IWR Planning Suite II interface for Multi-Criteria Decision Analysis (MCDA) setup. The main window is titled "Multi-Criteria Decision Analysis" and shows the "Simple Study Planning Set 1 (Editor)" selected in the "Planning Sets" dropdown. A "Create/Manage" button is visible next to it. The "Ranking" tab is active, showing the "Rank Method" section with "Weighted Scoring" selected. A modal window titled "Manage MCDA Scenarios for planning set 'Simple Study Planning Set 1 (Editor)'" is open, displaying a table of scenarios. The "Add New" button at the bottom left of the modal is highlighted, and the "OSE Preference" row is selected. The "OK" button at the bottom right of the modal is also highlighted. The "Planning Set Properties" panel on the left shows the "Simple Study Planning Set 1" configuration, including its name, description, and plan count. The status bar at the bottom indicates the current plan set and version information.

1. Simple Study Planning Set 1 (Editor)

2. Create/Manage

3. Add New

4. OSE Preference

5. OK

Name	Description	Date Created	Date Last Saved	Delete
EQ Preference	Strong Preference for EQ Outcomes	9/26/2019 4:02 PM	9/26/2019 4:24 PM	
OSE Preference	Strong Preference for OS Outcomes	9/26/2019 4:02 PM	9/26/2019 4:02 PM	

Simple Study [Simple Study Planning Set 1] v2.0.9.1 9/27/2019



IWRPS-II MCDA MODULE: WEIGHTS

The screenshot displays the IWR Planning Suite II Multi-Criteria Decision Analysis (MCDA) module. The interface is divided into several sections:

- Planning Sets:** Shows 'User-Entered Sets' (Simple Study Planning Set 1) and 'Generated Sets' (MCDA Weighted Scoring By Range).
- MCDA Scenario:** EQ Preference
- Weights Tab:** Displays a table of AHP Weights with columns for Criterion, Weight, and Normalized Value.
- Perform MCDA:** Includes a field for 'New Planning Set Name' (MCDA Weighted Scoring By Range29) and a checkbox for 'Exclude No Action Plan'.

Key elements are highlighted with red boxes and yellow circles:

- 1:** The 'Weights' tab in the 'Ranking' section.
- 2:** The 'EQ' row in the 'AHP Weights' table.
- 3:** The 'New Planning Set Name' field.
- 4:** The 'Ranking' tab.

Criterion	Weight	Normalized Value
Cost	1	0.111
EQ	4	0.444
HabitatQuality	0	0
HabitatQuantity	0	0
OSE	2	0.222
NED	2	0.222

Simple Study [Simple Study Planning Set 1] v2.0.9.1 9/27/2019 U.S. ARMY

IWRPS-II MCDA MODULE: RANKING METHOD AND GOALS

The screenshot displays the 'Multi-Criteria Decision Analysis' (MCDA) configuration window in the IWR Planning Suite II. The window is titled 'Multi-Criteria Decision Analysis' and is set to 'Simple Study Planning Set 1' and 'EQ Preference' scenario. The 'Ranking' tab is active, showing 'Weighted Scoring' as the selected method. A table lists criteria with their weights and goals. The 'Normal Methods' section shows 'By Range' selected. The 'Perform MCDA' section has a 'Generate' button highlighted.

Ranking Method Configuration:

- Rank Method: Weighted Scoring, Outranking, Efficient Frontier, Compromise Programming

Criterion	Weight	Min/Max
Cost	1	Minimize
EQ	4	Maximize
HabitatQuality	0	Maximize
HabitatQuantity	0	Maximize
OSE	2	Maximize
NED	2	Maximize

Normal Methods: By Range, By Percent of Max, By Percent of Total

Perform MCDA: New Planning Set Name: MCDA Weighted Scoring By Range2, Exclude No Action Plan

Buttons: Save Changes, Generate



IWRPS-II MCDA MODULE: MCDA RESULTS

1 (Navigation menu: Graphs & Reports)

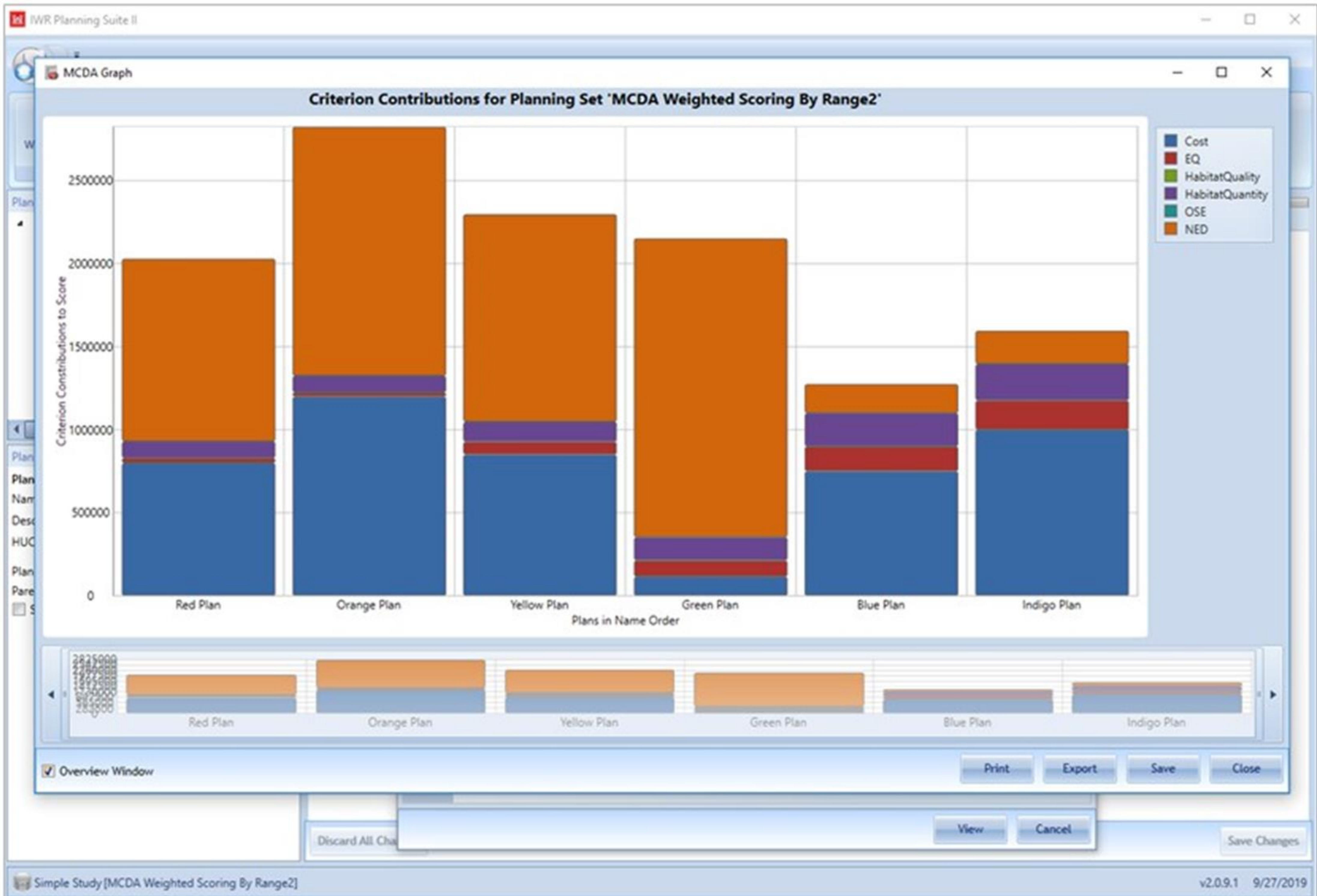
Plan	Plan Description	Cost	EQ	HabitatQuality	HabitatQuantity	OSE	NED	Rank	Score
Red Plan	Hardened Shoreline - Extent A	\$800,000.00	30,000	0.3	100,000	0.4	1,100,000	6	0.182
Orange Plan	Hardened Shoreline - Extent B	\$1,200,000.00	25,000	0.25	100,000	0.6	1,500,000	4	0.403
Yellow Plan	Hybrid Shoreline - Extent A	\$850,000.00	78,000	0.65	120,000	0.4	1,250,000	5	0.339
Green Plan	Hybrid Shoreline - Extent B	\$115,000.00	98,000	0.7	140,000	0.55	1,800,000	1	0.714
Blue Plan	Restoration Alternative - Extent A	\$750,000.00	150,000	0.75	200,000	0.45	175,000	3	0.469
Indigo Plan	Restoration Alternative - Extent B	\$1,000,000.00	176,000	0.8	220,000	0.5	200,000	2	0.579

2 (MCDA Results Viewer: Criteria Contributions to Score chart)

3 (View button)

Simple Study [MCDA Weighted Scoring By Range2] v2.0.9.1 9/27/2019 U.S. ARMY

IWRPS-II MCDA MODULE: SAMPLE CHART



IWRPS-II MCDA MODULE: ALTERNATIVE WEIGHTS

IWR Planning Suite II

Home Generator Uncertainty MCDA Tools

Weights, Ranking & Analysis Graphs & Reports MCDA

Multi-Criteria Decision Analysis

Planning Sets: Simple Study Planning Set 1 (Edit) MCDA Scenario: EQ ONLY Create/Manage

Ranking Weights 1

AHP Weights Weight Matrix

Criterion	Weight	Normalized Value
Cost	1	0.067
EQ	10	0.667
HabitatQuality	1	0.067
HabitatQuantity	1	0.067
OSE	1	0.067
NED	1	0.067

Discard All Changes Save Changes

Perform MCDA

New Planning Set Name: MCDA Weighted Scoring By Range29 3 Exclude No Action Plan

Generate Cancel

Discard All Changes Save Changes

Simple Study [Simple Study Planning Set 1] v2.0.9.1 9/27/2019 U.S. ARMY

IWRPS-II MCDA MODULE: RANKING METHOD AND GOALS

Multi-Criteria Decision Analysis

Planning Sets: Simple Study Planning Set 1 (Edit) MCDA Scenario: EQ ONLY Create/Manage

Ranking Weights

Rank Method

Weighted Scoring Outranking Efficient Frontier Compromise Programming

Criterion	Weight	Min/Max
Cost	1	Minimize
EQ	10	Maximize
HabitatQuality	1	Maximize
HabitatQuantity	1	Maximize
OSE	1	Maximize
NED	1	Maximize

Normal Methods

By Range By Percent of Max By Percent of Total

Discard All Changes Save Changes

Perform MCDA

New Planning Set Name: MCDA Weighted Scoring By Range29 Exclude No Action Plan

Generate

Simple Study [Simple Study Planning Set 1] v2.0.9.1 9/27/2019 U.S. ARMY

IWRPS-II MCDA MODULE: COMPARING RESULTS

Strong Emphasis on EQ

Plan	Plan Description	Cost	EQ	HabitatQuality	HabitatQuantity	OSE	NED	Rank	Score
Red Plan	Hardened Shoreline - Extent A	\$800,000.00	30,000	0.3	100,000	0.4	1,100,000	6	0.182
Orange Plan	Hardened Shoreline - Extent B	\$1,200,000.00	25,000	0.25	100,000	0.6	1,500,000	4	0.403
Yellow Plan	Hybrid Shoreline - Extent A	\$850,000.00	78,000	0.65	120,000	0.4	1,250,000	5	0.339
Green Plan	Hybrid Shoreline - Extent B	\$115,000.00	98,000	0.7	140,000	0.55	1,800,000	1	0.714
Blue Plan	Restoration Alternative - Extent A	\$750,000.00	150,000	0.75	200,000	0.45	175,000	3	0.469
Indigo Plan	Restoration Alternative - Extent B	\$1,000,000.00	176,000	0.8	220,000	0.5	200,000	2	0.579

Singular Emphasis on EQ

Plan	Plan Description	Cost	EQ	HabitatQuality	HabitatQuantity	OSE	NED	Rank	Score
Red Plan	Hardened Shoreline - Extent A	\$800,000.00	30,000	0.3	100,000	0.4	1,100,000	6	0.091
Orange Plan	Hardened Shoreline - Extent B	\$1,200,000.00	25,000	0.25	100,000	0.6	1,500,000	5	0.122
Yellow Plan	Hybrid Shoreline - Extent A	\$850,000.00	78,000	0.65	120,000	0.4	1,250,000	4	0.36
Green Plan	Hybrid Shoreline - Extent B	\$115,000.00	98,000	0.7	140,000	0.55	1,800,000	3	0.584
Blue Plan	Restoration Alternative - Extent A	\$750,000.00	150,000	0.75	200,000	0.45	175,000	2	0.713
Indigo Plan	Restoration Alternative - Extent B	\$1,000,000.00	176,000	0.8	220,000	0.5	200,000	1	0.848

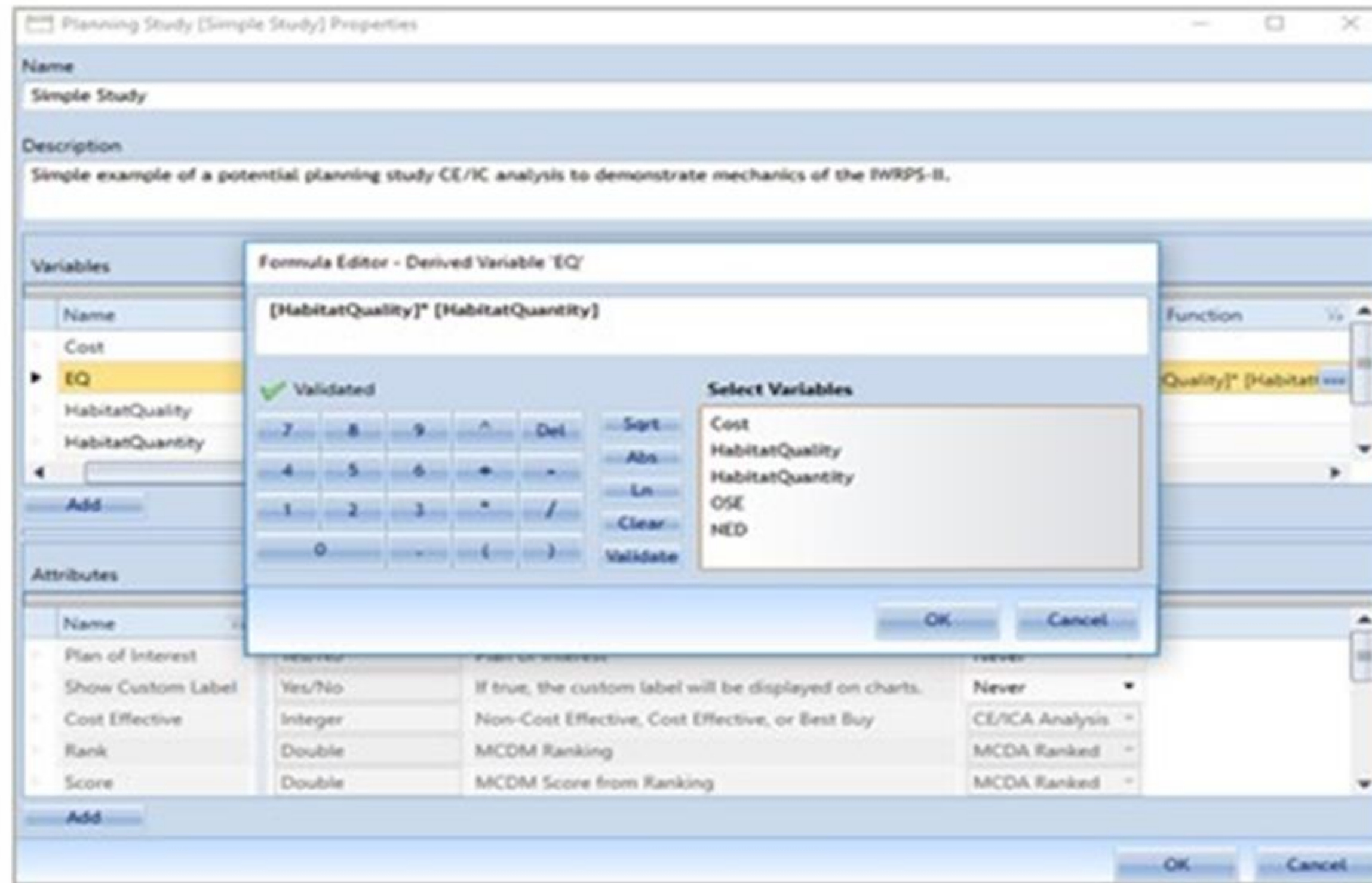
THE BASICS...



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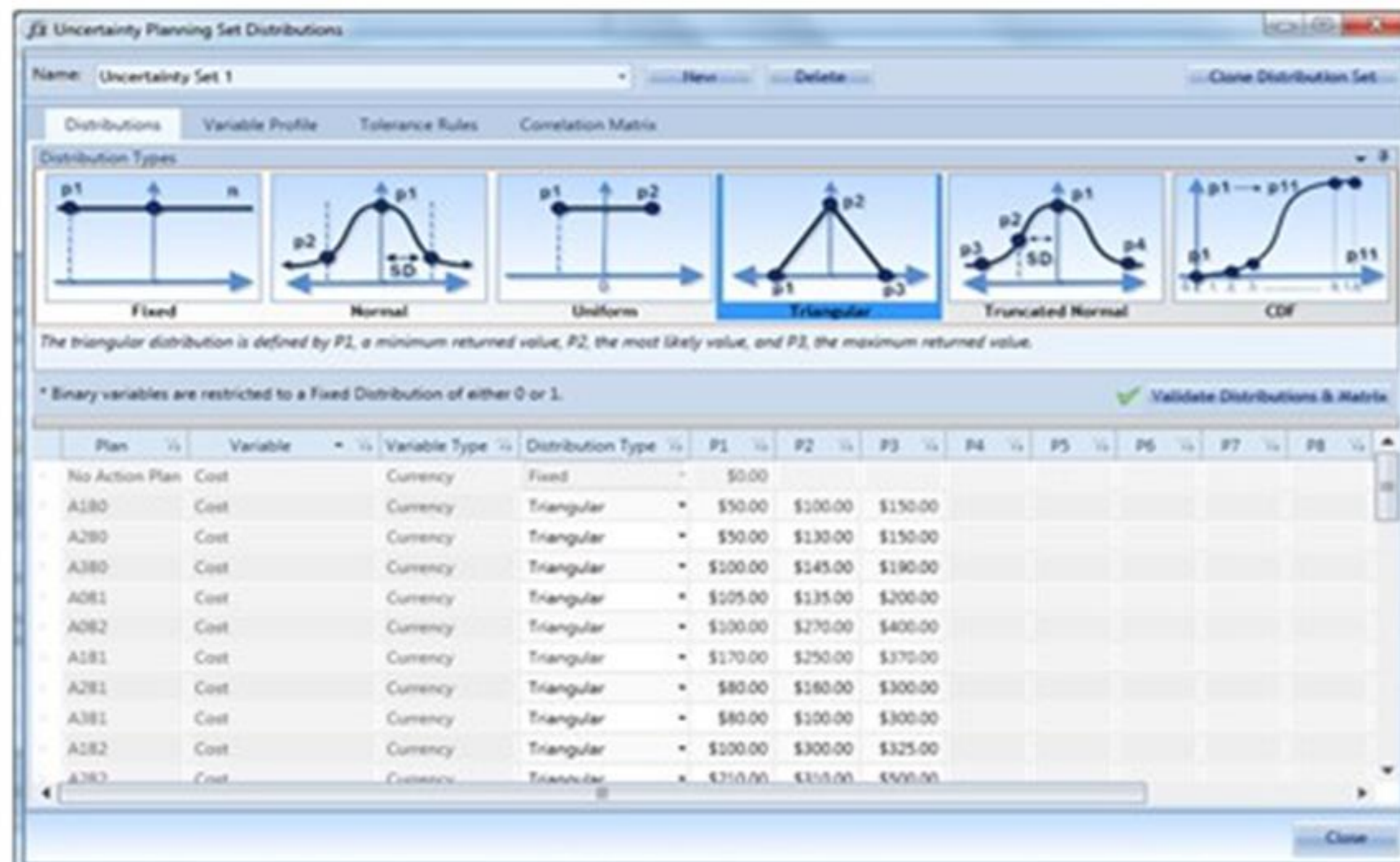


RELATED APPLICATIONS



Derived Values

- Habitat Indices
- Social Indices
- Resilience



Uncertainty

- Risk-Informed CE/ICA
- Plan Robustness



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DOWNLOADING THE SOFTWARE

The latest version of the IWR Planning Suite II (Version 2.0.9) model was certified on May 31st, 2018. Make sure all previous versions of the IWR Planning Suite software have been uninstalled from your computer, before installing the new version

- Go to the ACE-IT Home Page at <https://aceit.usace.army.mil/Pages/default.aspx>.
- From the menu at the top of the page, click "**Submit Your Request**". This will take you to the ACE-IT Service Catalog.
- Select "**Add or Install Something?**", Select "**Software**".
- Select "**Open Website**". This will take you to the USACE App Portal.
- In the **Search Bar** at the very top of the page, enter "**IWR Planning Suite**".
- From the resulting list, select "**IWR Planning Suite 2.0.9 – 13 September 2018**" and then click "**Add to Cart**".
- Click on your Cart in the upper right hand corner of the screen, then click "View cart and checkout."

Step-by-step instructions are also available in the IWR Planning Assistance Library.

(<https://publibrary.planusace.us/#/series/IWR%20Planning%20Suite>)



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TRAINING RESOURCES & HELP

- Links to the software, certification memo, and other related resources can be found at <http://www.iwr.usace.army.mil/Missions/Economics/IWR-Planning-Suite/>.
- Training materials that highlight IWR Planning Suite's capabilities, improvements and case study applications are available online at the [IWR Planning Assistance Library](#).
- Customized or study-specific training/assistance is also available upon request. For Support, Please contact:
 - IWR Planning Suite Development Team at: DLL-CEIWR_IWR-PLAN; or
 - ECO-PCX



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Questions?

Type questions in the chat box.
We will answer as many
as time allows.

This webinar will be posted to the
Planning Community Toolbox:
<http://www.corpsplanning.us>



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