Using Autodesk® InfraWorks™ to Win Stakeholder Approvals



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Where We Work: Idaho Power



- 2,000+ employees
- 500,000+ customers over a 24K sq/mi service territory
- 17 low-cost hydroelectric projects

Learning Objectives

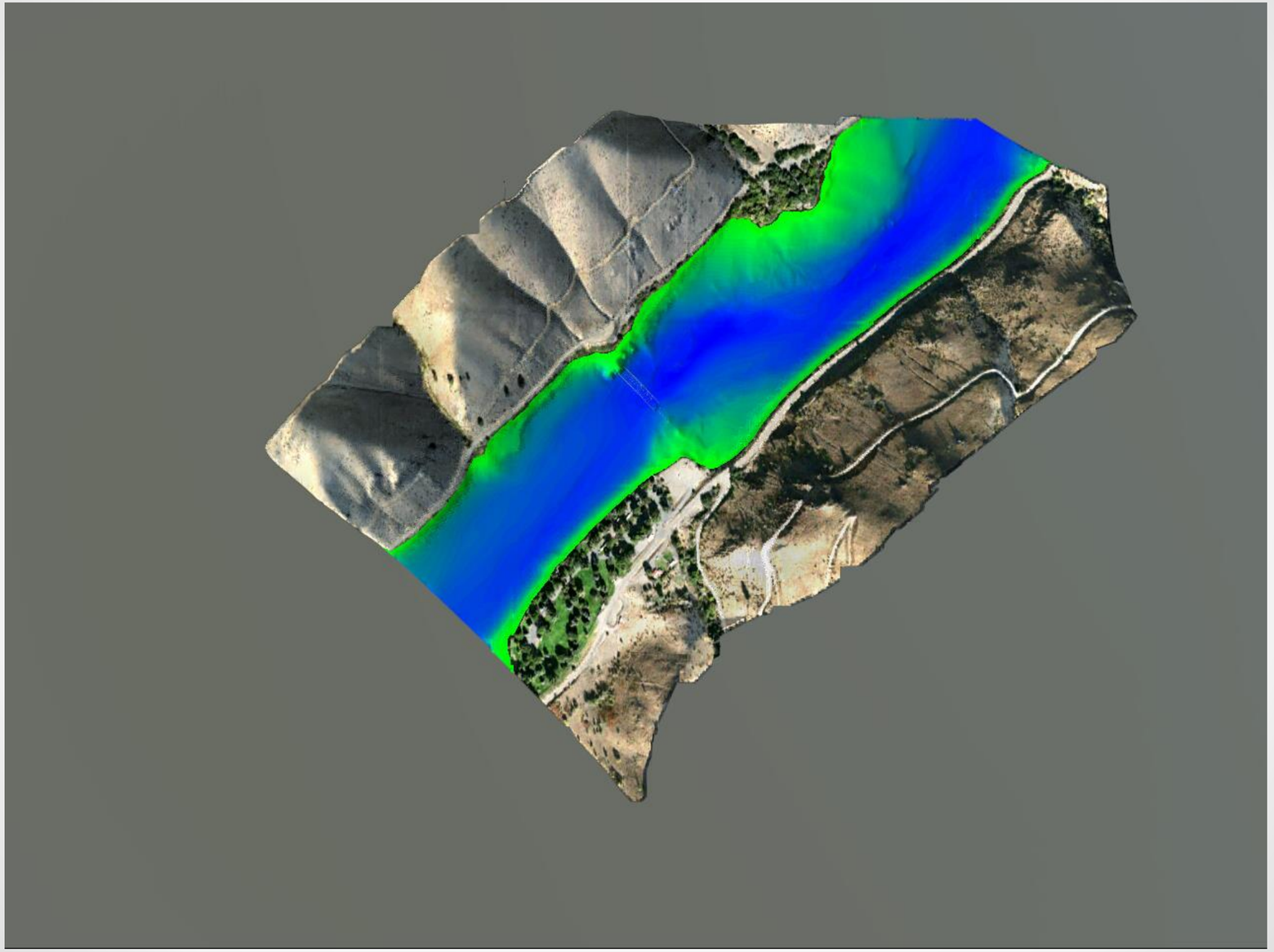
- Gather and organize project data
- Set up an InfraWorks project
- Create a 3D model
- Choose a method for presenting your ideas

What is InfraWorks?



"A way to quickly generate 3D large-scale infrastructure models from existing data sources and easily create high-impact visualizations."

The Ballard Bridge Comes To Life



Typical Project Schedule

- Engineering Design 2010–2015
- Community Involvement 2010–2014
- Easements 2015
- Construction 2016
- Station & Line In Service 2016



A Project Doesn’t Exist Without Stakeholders

Internal Stakeholders:

- Planning
- Engineering
- Drafting/GIS
- Executive office
- Shareholders

External Stakeholders:

- Non-technical public stakeholders
- Surrounding residents
- Business owners
- Government entities
- Customers

Bonus Handout: Creating Positive Experiences Through Effective Stakeholder Engagement

Following are five values that have proven to be effective for engaging stakeholders:

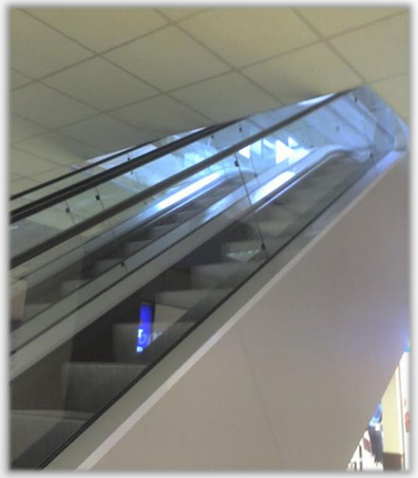
- Trusting Relationships
- Open and Honest Communication
- Fairness
- Cooperation
- Teamwork

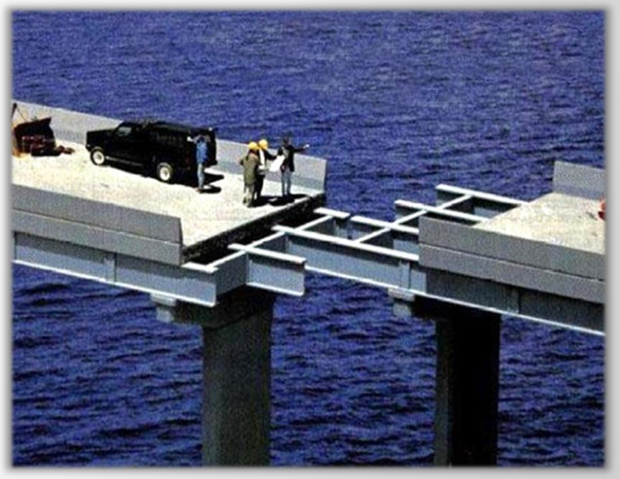
Linear 2D Cycles Are The Old Way Of Working



3D Better Than 2D, Says Your Brain

- Non technical audiences have a hard time understanding 2D views
- Not understanding 2D views results in construction errors
- People are 29% more attentive, and on average 7% more engaged when viewing 3D



Even A Four Year Old Can Design And Understand 3D

You don’t have to be a rocket scientist to understand why 3D designs are better





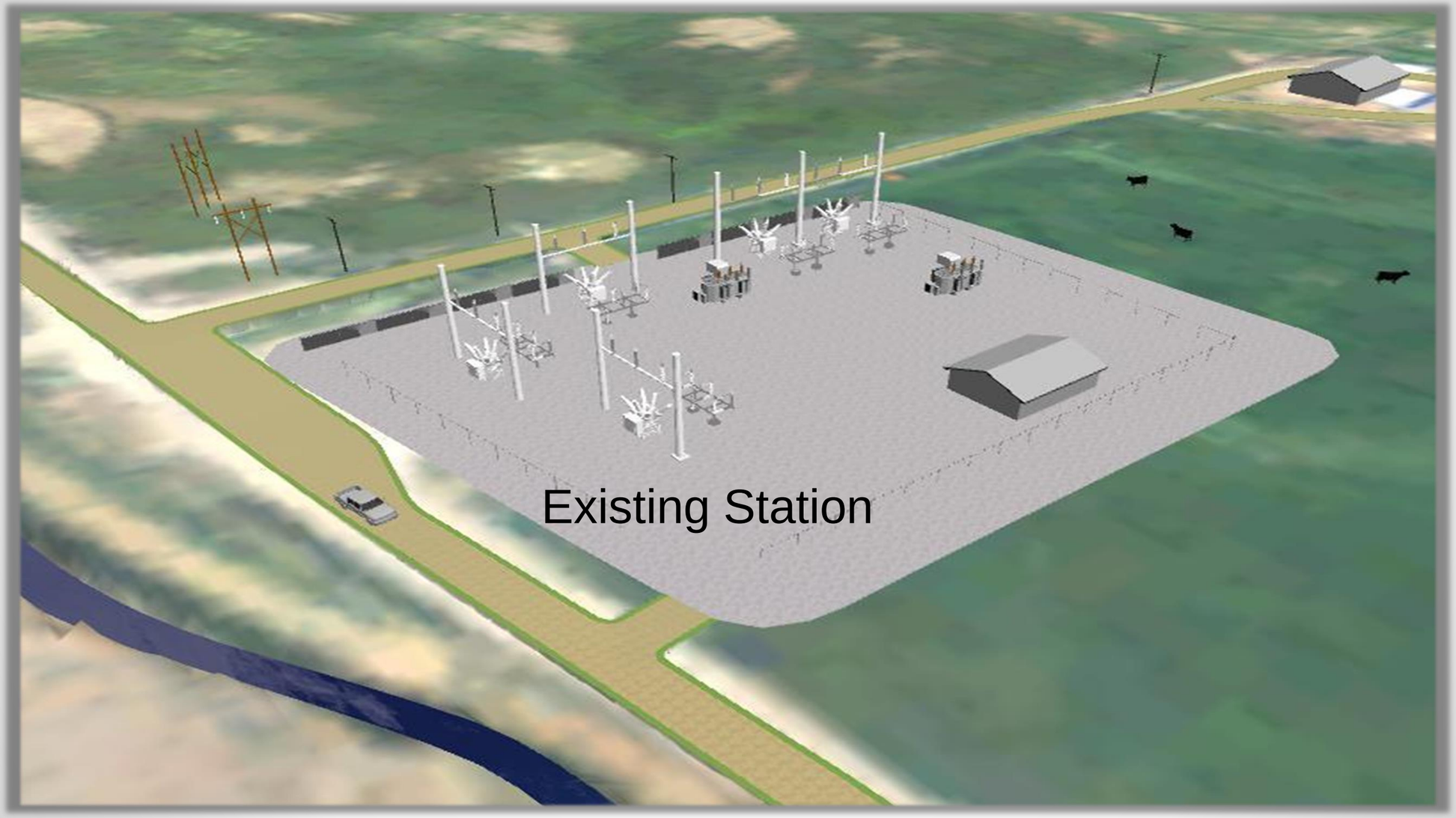
Case Studies



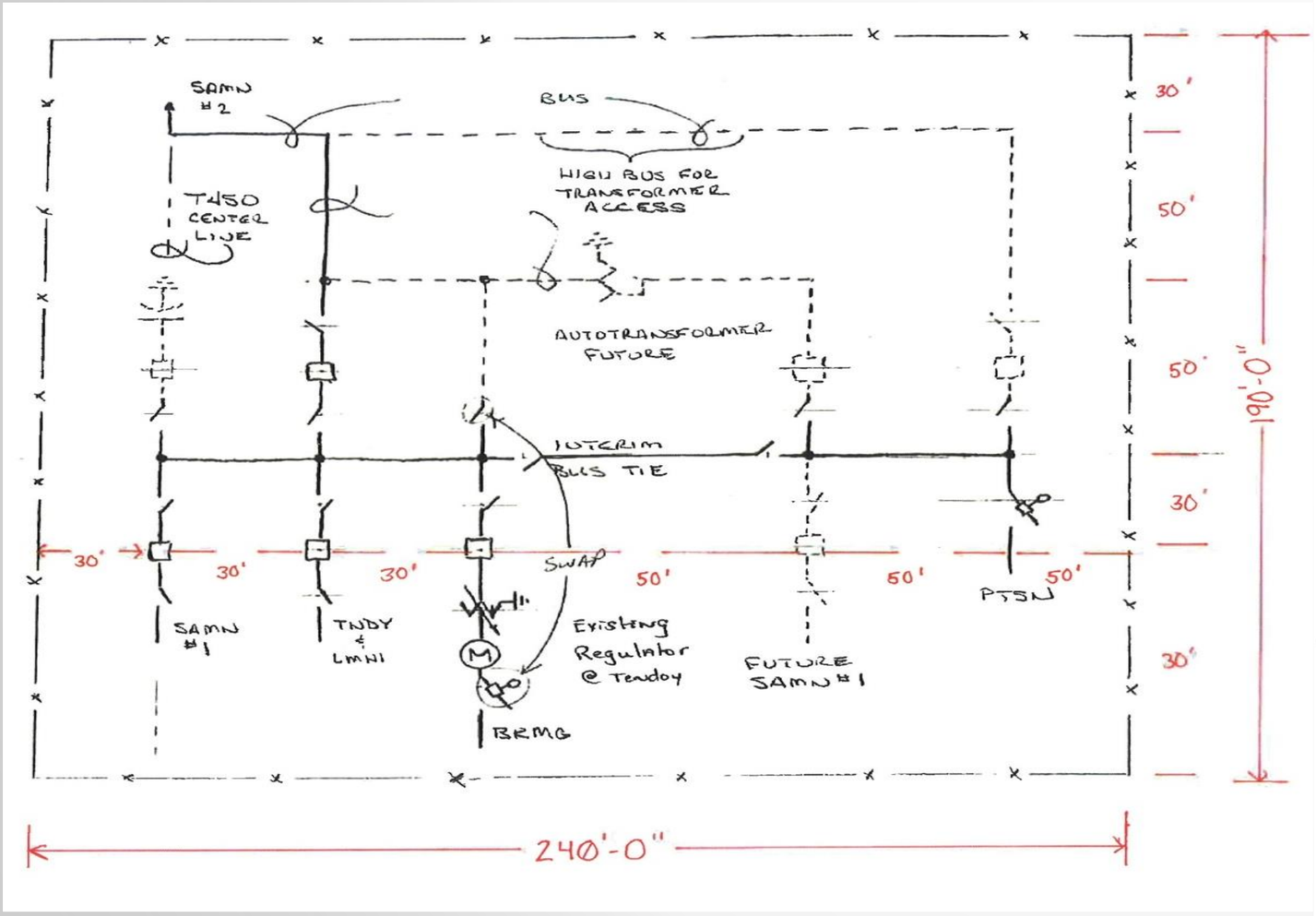
Projects

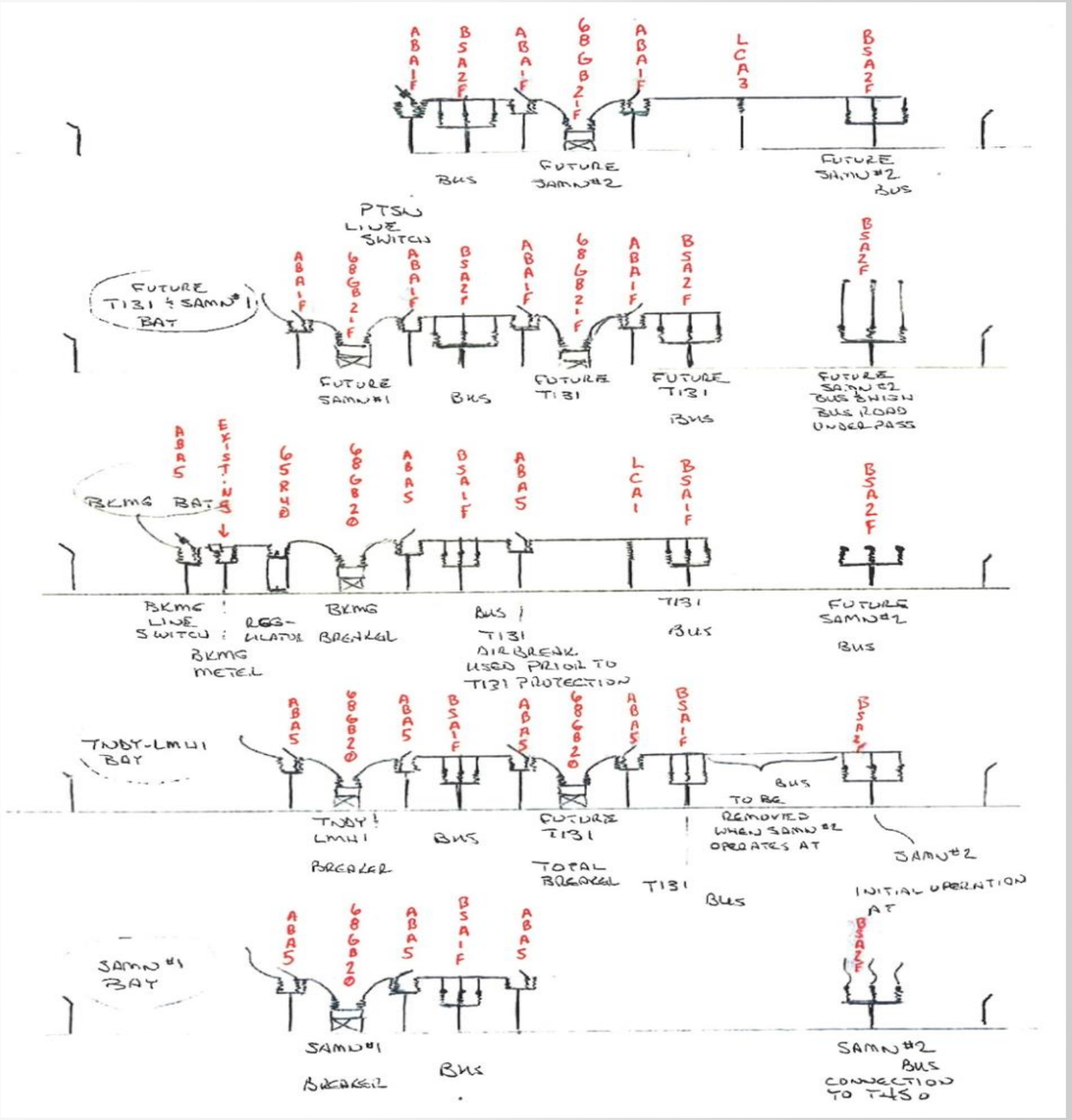
- Case 1: Substation project in Eastern Idaho
- Case 2: Pilot substation project
- Case 3: Stream gauge site in Hells Canyon
- Case 4: KRIS Barn, a conceptual 3D model of an indoor substation (demo)

Case No. 1 Substation Project In Eastern Idaho

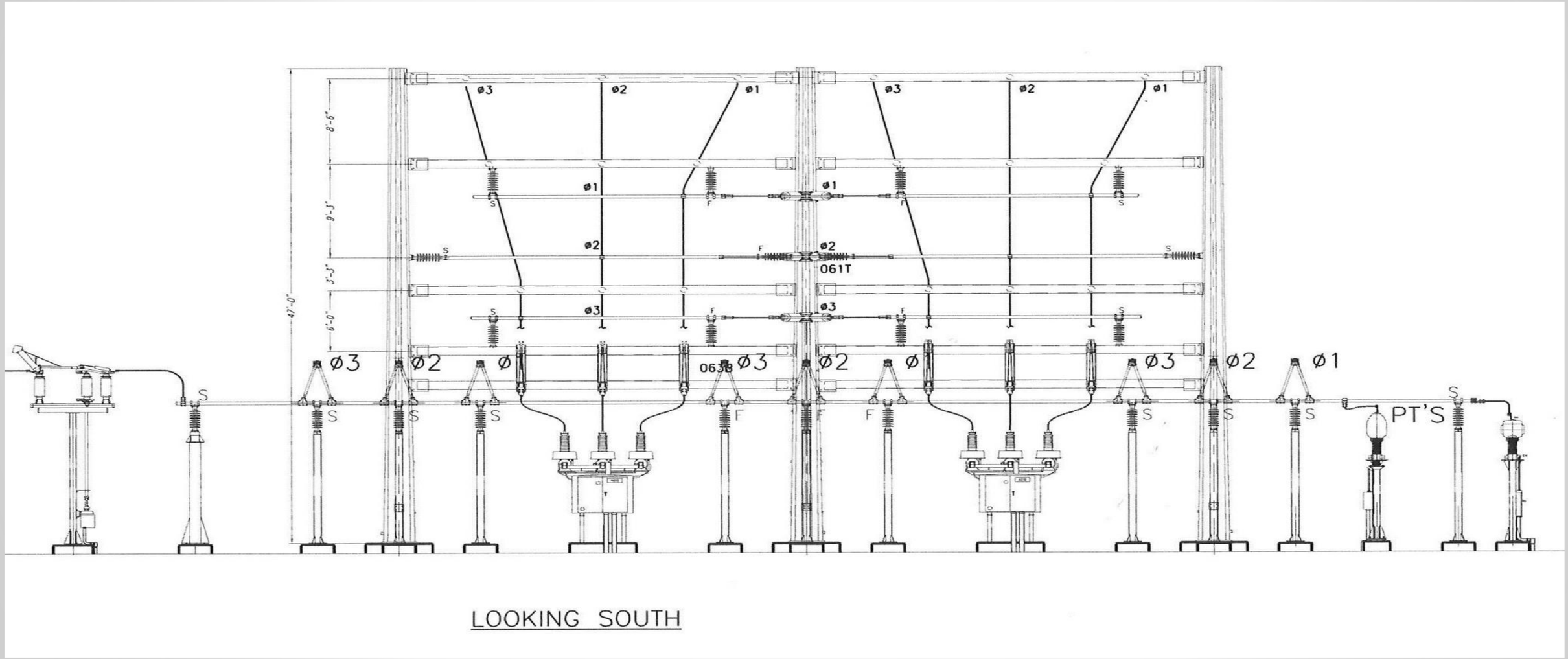


Case No. 1

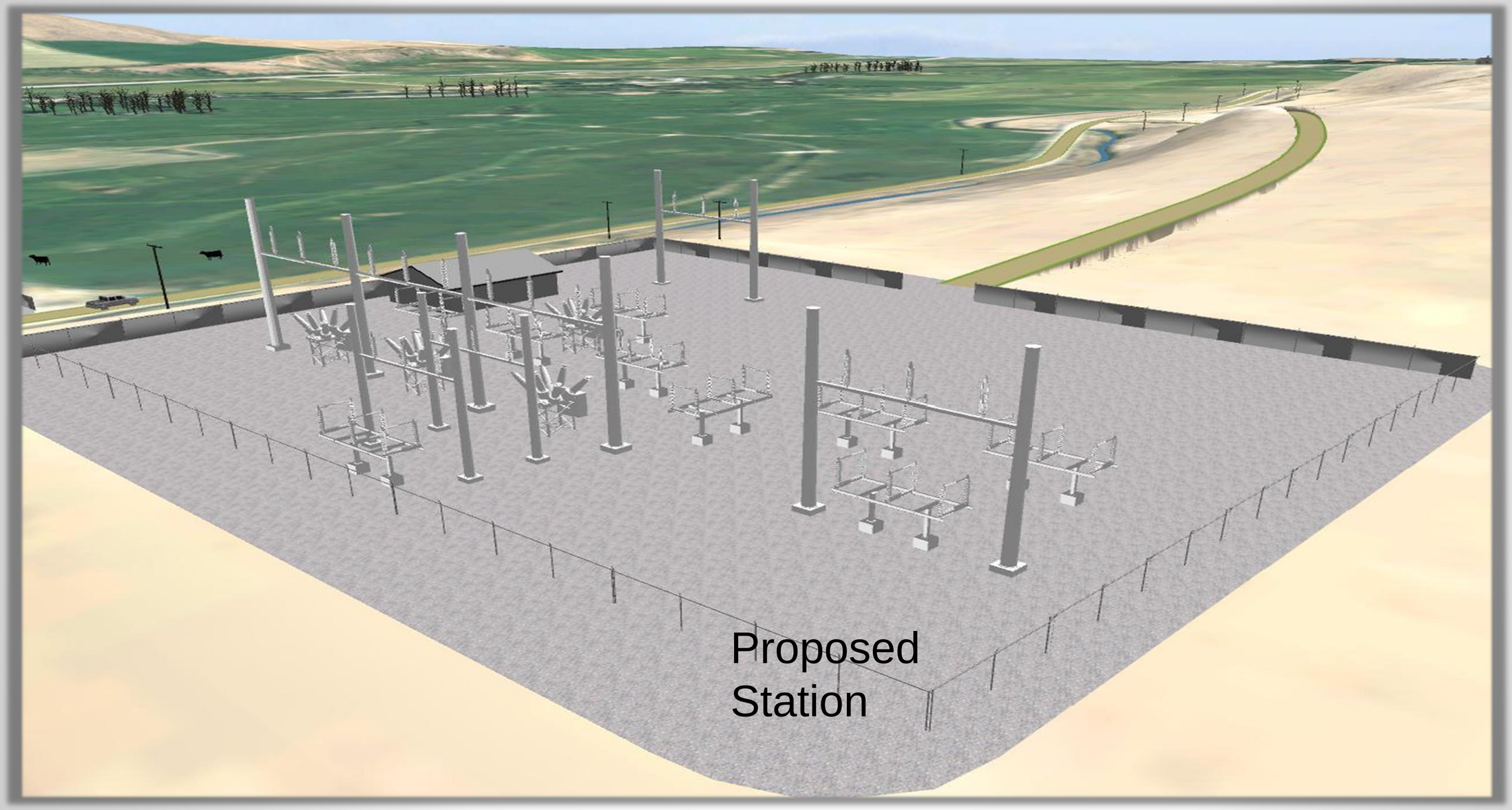

SAMN #2
BUS
HIGH BUS FOR TRANSFORMER ACCESS
T450 CENTER LINE
AUTOTRANSFORMER FUTURE
INTERIM BUS TIE
SWAP
Existing Regulator @ Tendoy
BRMG
SAMN #1
TNDY & LMN1
FUTURE SAMN#1
PTSN
30'
50'
190'-0"
240'-0"


ABAIF
BSA2F
LCA3
FUTURE SAMN#2 BUS
PTSN LINE SWITCH
FUTURE T131 & SAMN#1 BAY
FUTURE SAMN#1
BUS
FUTURE T131
BSA2F
FUTURE SAMN#2 BUS BRIDGE BUS ROAD UNDER PASS
ABA5
EXISTING
6SR4D
68B820
ABAS
BSAIF
LCA1
BKMG BAY
BKMG LINE SWITCH
BKMG METER
REGULATOR
BKMG BREAKER
BUS / T131 AIRBREAK USED PRIOR TO T131 PROTECTION
TNDY-LMN1 BAY
TNDY / LMN1 BREAKER
TO BE REMOVED WHEN SAMN#2 OPERATES AT
SAMN#2
INITIAL OPERATION AT
SAMN #1 BAY
SAMN#1 BREAKER
SAMN#2 BUS CONNECTION TO T450

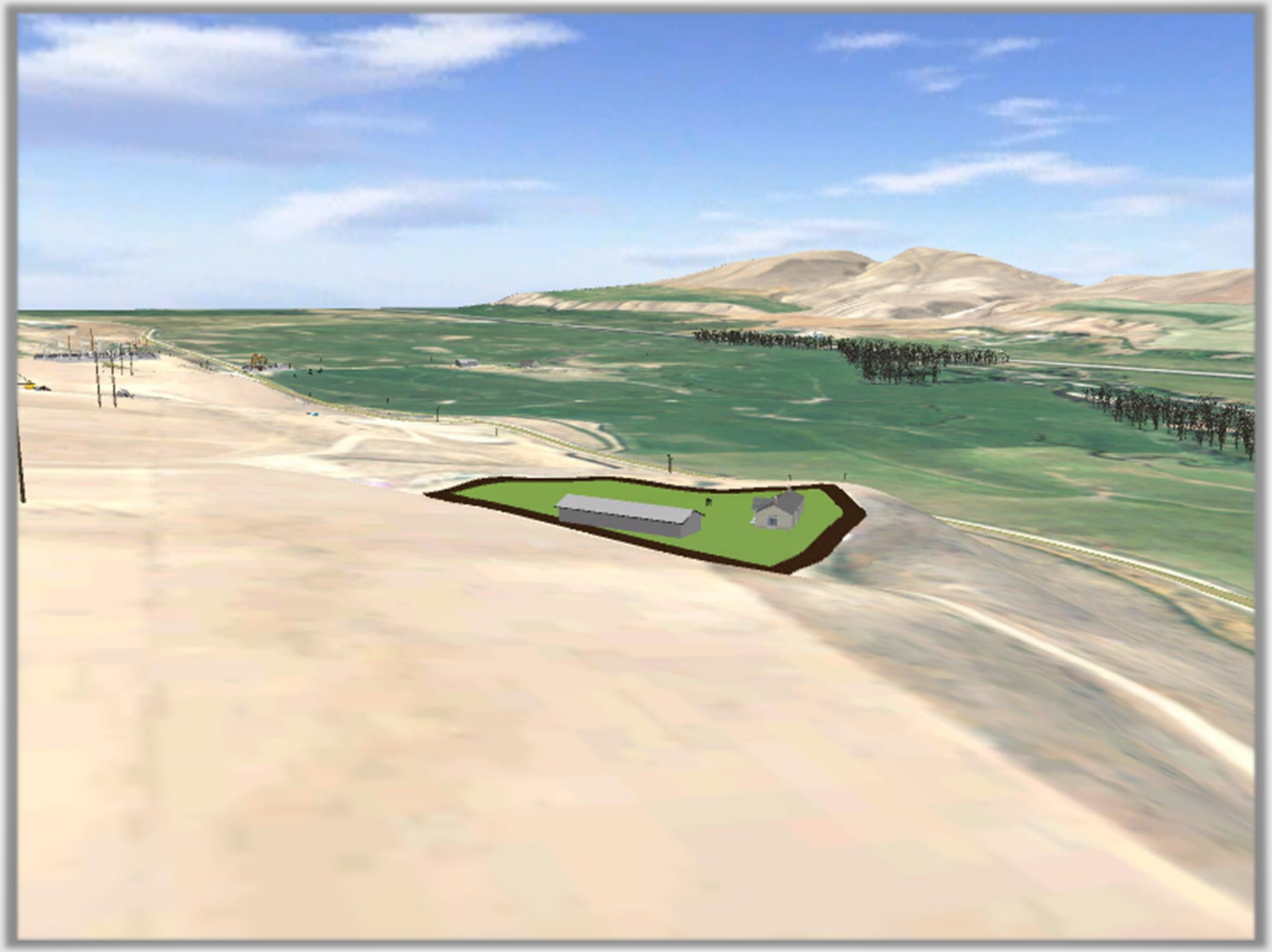
Case No. 1



Case No. 1



Case No. 1



How I Impressed This Stakeholder

- Presentation was brought on site to remote location with an iPad/laptop.
- Demonstrated the view of the proposed station from stakeholders' front door.

Lesson Learned: Know your audience, I used general 3D models of people in the simulation, it was a distraction because the models did not resemble the property owners.

Case No. 2 Pilot Substation Project



How I Impressed This Stakeholder

- Presentation was brought on site to a corporate board room
- Demonstrated the view of the proposed station from stakeholders campus
- Lesson Learned—film speed was too fast

Case No. 3 Stream Gauge Site In Hells Canyon



Stock Stream Gauge photo by IPC

Case No. 3



Case No. 3



Case No. 3





Case No. 3



Case No. 3



How I’m Working With This Stakeholder

Working with internal stakeholders to create the 3D model to have a better understanding about the impacts of the project.

Demonstrating the view of the proposed stream gauge site from two external stakeholders’ point of view– a jet boat, and a rafter approaching the site from upstream or downstream.

The model will be used interactively to work with government stakeholders during the permitting process.



How To Gather And Organize Project Data

I Have A Project For A Stakeholder Review, How Do I Get Started?

In a pinch you can get started modeling your project in 3D with the following:

- A surface model
- Aerial imagery
- A CAD application
- A shopping list



What Is A Shopping List?

A shopping list is a list of items you need to create your 3D model. Here is a sample shopping list from one of my projects. I've added a note to each item indicating where it was found.

1. Trimble Warehouse:
    a. Chain link fence
    b. Control building
    c. Transformer
    d. Air Brakes
    e. Cows
    f. House
    g. Shop
2. InfraWorks:
    a. Distribution poles
    b. People
    c. Pickup
    d. Trees
3. PLS CAD—structures
4. Surface Model—NED
5. Aerial Imagery—IDOR NAIP
6. Circuit Breaker—from manufacturer

Where Can I Find Data?

- Get familiar with data already at the office
- Freebies from the web
  - http://sketchup.google.com/3dwarehouse/
  - http://grabcad.com
  - http://viewer.nationalmap.gov/viewer/
- Create or purchase new data

I've Never Modeled Anything In 3D Before, Should I Give Up Now, Take More Training—Please Advise?

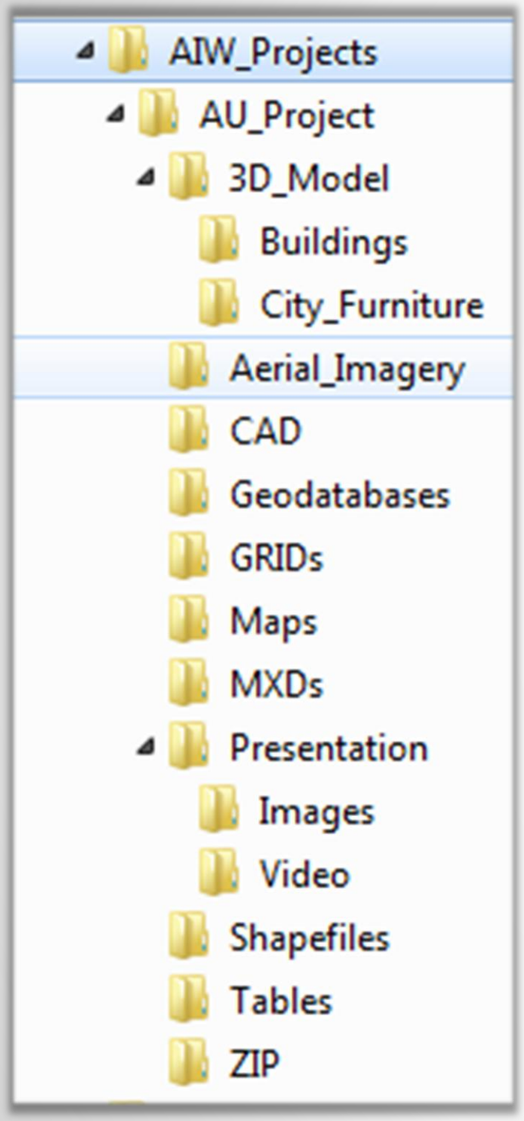
- Think like a pirate
- Connect with experts within your organization
- Join a local user group
- Read the Autodesk InfraWorks Training Guide
- Check out the Autodesk InfraWorks 2014 learning videos on YouTube



How Do I Keep Track Of All This “Big Data”?

- Create a system of organizing your data
- Create a template project folder and use it to begin each project
- Work with your IT department to establish best practices

The Template Structure



- *AIW_Projects*—The main folder.
- *3D_Model*—Broken down by discipline, anything that is custom made or downloaded from the web that can be used on other projects is archived here. fbx .3ds .obj .dae .dxf .imx.
- *Aerial Imagery*—Project-specific clipped images in the following formats: .tiff .tif (.aux .tif.xml .tfw) .jpeg .sid (.aux .sid.xml .sid.aux.xml .sdw) .dog .ecw .img .jp2 .jpg .png .vrt .xml .adf .asc .bt .ddf .dem .dt0 .dt1 .dt2 .grd .hgt.
- *CAD*—.dwg .dxf .bak .dwt.
- *Geodatabases*—.gdb
- *GRIDs*—ESRI raster files.
- *Maps*—Map products like images or PDFs.
- *MXDs*—.mxd .nmf.
- *Presentation*—.avi .wmv image files .ppt etc.
- *Shapefiles*—.shp .dbf .idx .prj .shx .dbf .idx .sdf .aux .rdd .dir .dat .nit .ovr .ini.
- *Tables*—Database tables, such as .xlsx .csv .doc .txt.
- *ZIP*—.7z .zip.

•Set up an InfraWorks project



Setting Up An InfraWorks Project

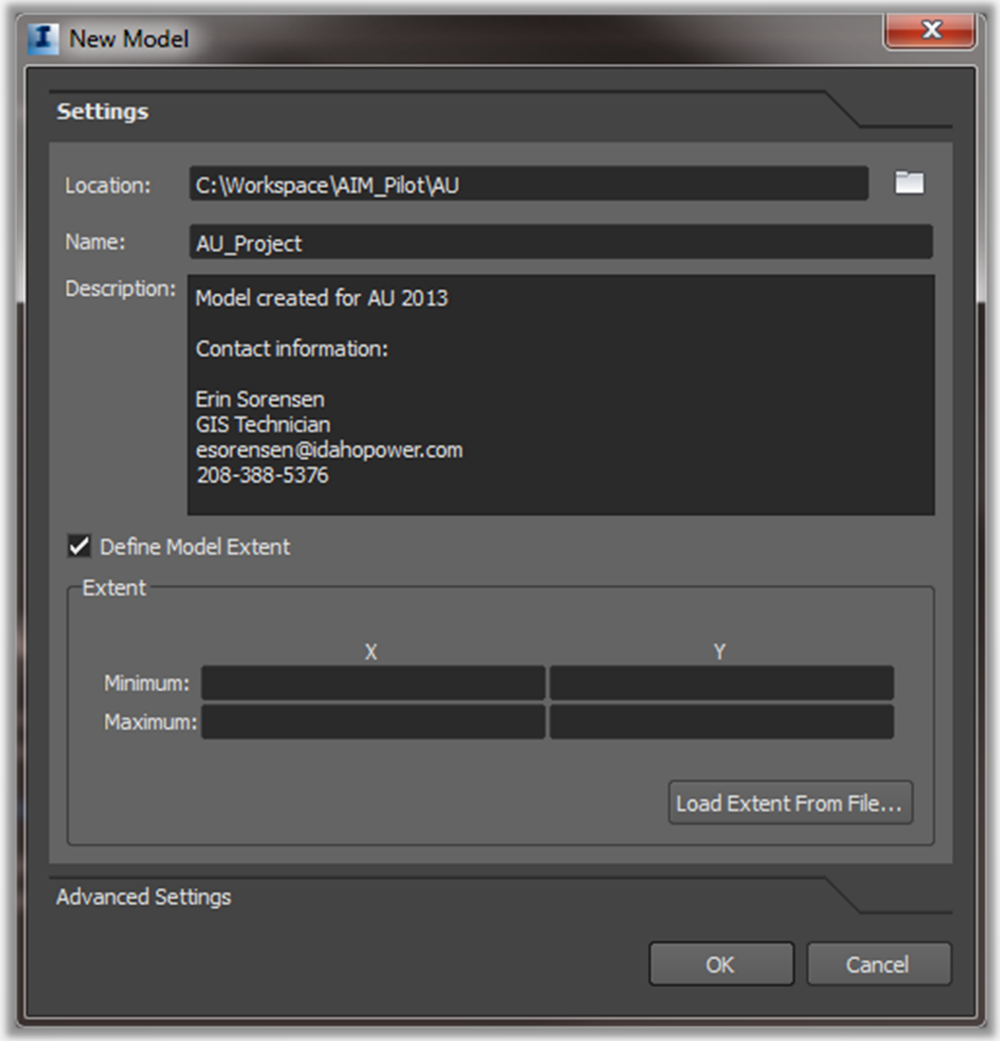
Ok, Now That I Have Data How Do I Set Up My InfraWorks Project?

You can create a new project without to having to change the default settings for the project (recommended for most projects).

Or you can start a new project from the startup menu with customized settings. To set up custom project parameters you will need to:

- Create project file location
- Describe the project
- Define the model extent
- Establish a project coordinate system
- Set up your units

Demo: Project Setup KRIS Substation



Useful Tips:

- Be patient when importing imagery and surfaces, depending on the data size, your PC setup this can take awhile.
- Layer imagery to fill in gaps.
- Importing point shape files for interactive placement of objects.



Choose The Best Method For Presenting Your Ideas

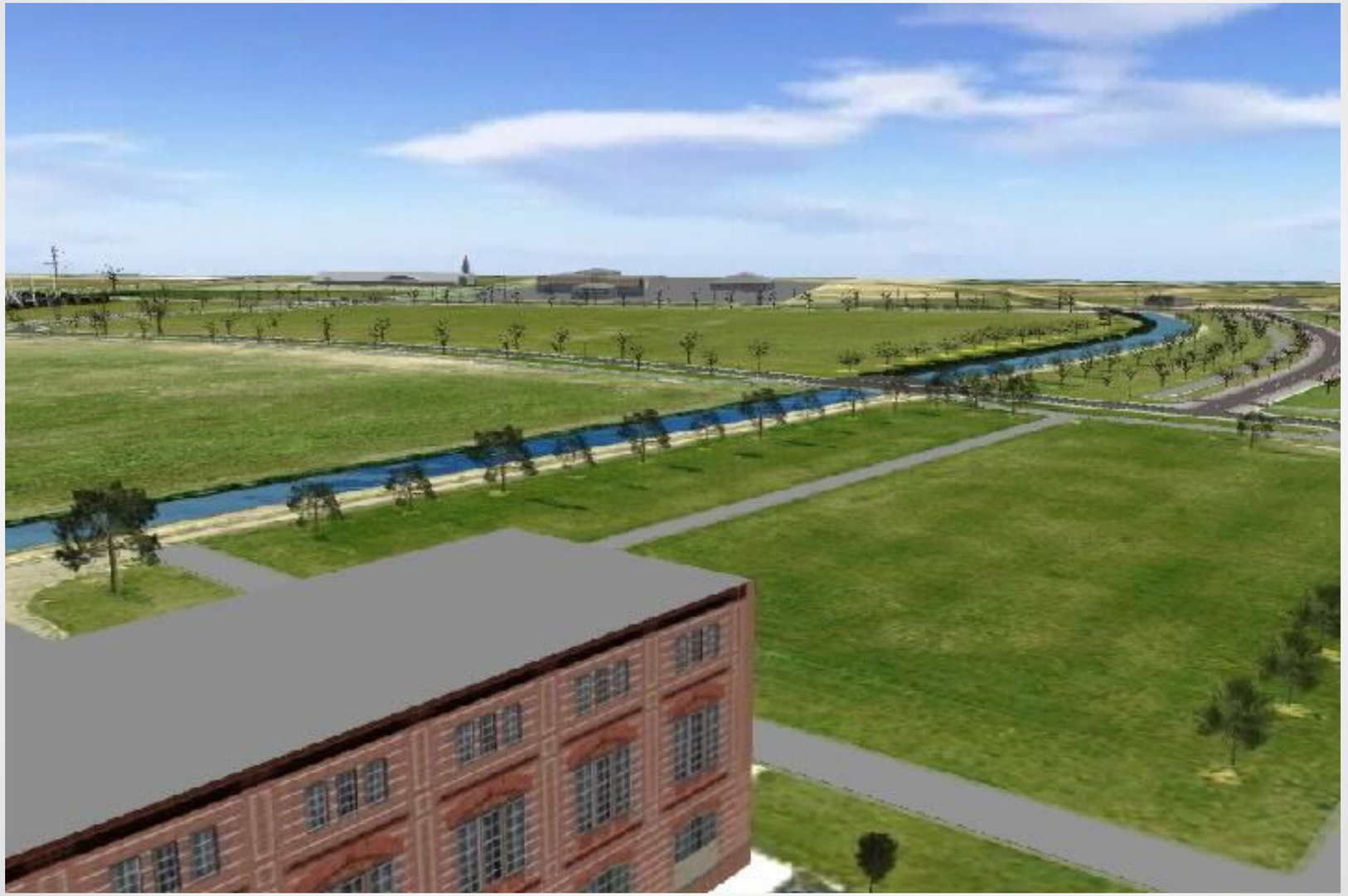
What's The Best Method For Presenting Your Ideas?

- The best presentation method matches the needs of your audience
- To know your audience do research, meet your audience
- Save a few fun tricks for live presentations

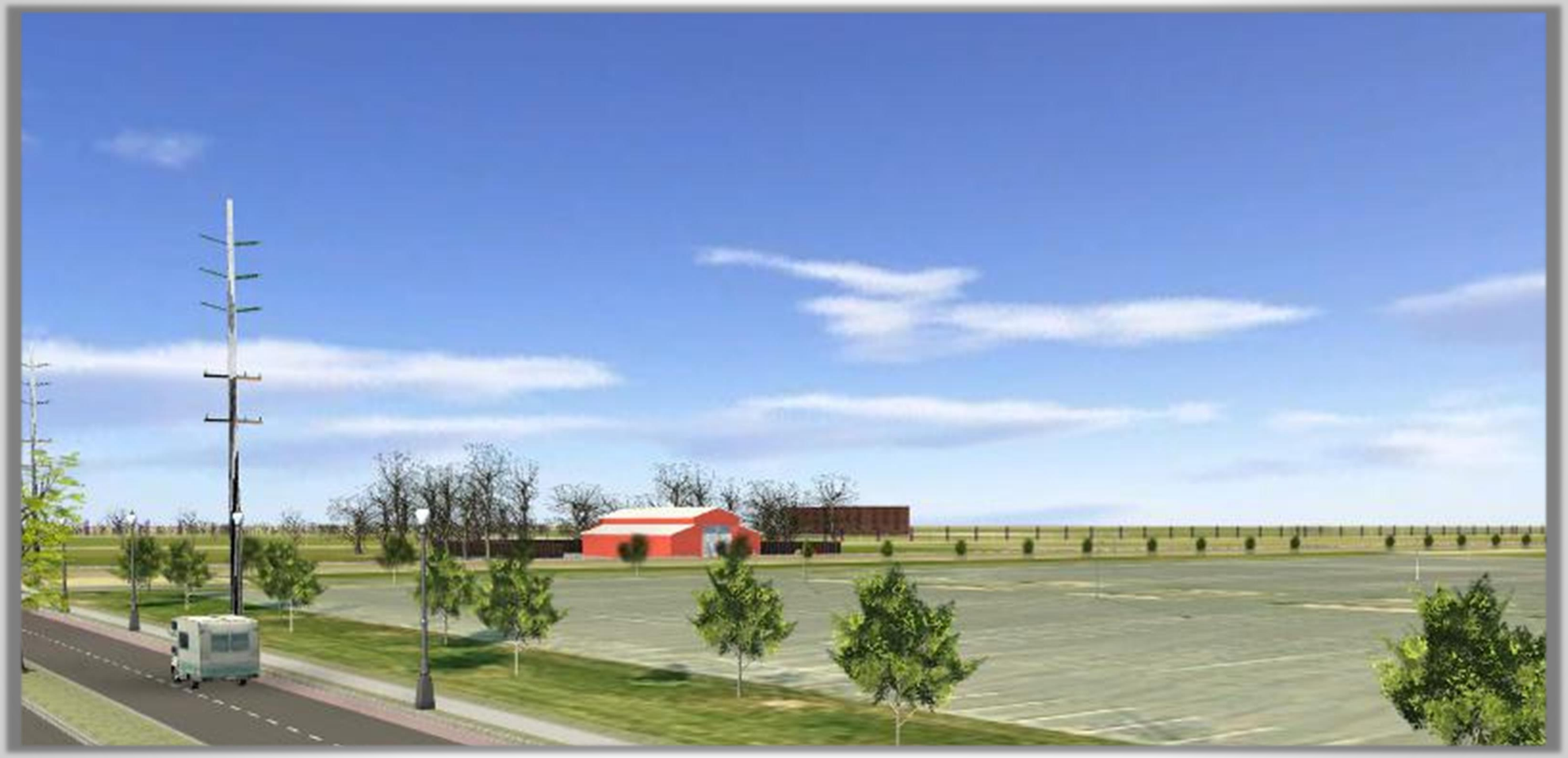
Film Basics, What Not To Do



Film Basics What To Do…



Film Tips



Q&A





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