

**FPA Interagency Science Team
Meeting Notes
9-20-2010**

Day 1

Topic: Spatial Fuels

Craig Thompson gave a presentation of the history of fuels prescriptions and treatments in FPA. He discussed the challenges between modeling needs and impacts on FPU planners. He then showed the proposal for the Spatial Fuel Prescriptions Location Process for FSIM Stage 1. Overlaid burn probability, treatments from NFPORS for historical fuel treatment density (this is not always adequate depending on how much info has been entered), and historical fire density, then he made a “location influence grid” over federal lands layer. Finally he compared the previous version (Fuel Prescription Location Mask) to this proposal. FPA Boise is waiting for more results and more testing. Trying not to engage the field except for treatment spreadsheet they got last year. Craig and Brent feel that it allows placement of treatments where likely to get hit by fire.

Discussion:

- Should 15% prescriptions be focused on burnable acres or federal burnable acres? What happens if Non-fed becomes a partner? Maybe build in a switch to allow it to filter both ways – federal, or non-federal.
- One example is an FPU that only has 7% federal lands – so allows FPU to focus on those lands they can change.
- Ignition density grid is not incorporated yet. Would be better for others to see (& understand) burn probabilities rather than what we’re currently using which is a random ignition grid. Will still get large fires starting where they’ve never started in the past.
- Craig: Want to do couple more FPUs. Streamline canopy characteristic (from lookup table to something more elegant), influence grid. Test it and see if it makes a difference.
- Why we do any treatment in Stage 1? To demonstrate topological effect of treatment on large fire growth and behavior. 15% not hardwired, but start to see effects.

Quigley: Thought it was to hone in on where the fuels would be placed in the various budget options. Answer: 15% is to train the regression model for when we do a treatment in Stage 2.

Danny: Didn’t we run into problem when people put in treatments never modeled in FSIM? Now have 2 years of treatment inputs so should have fairly comprehensive list of treatments.

Karen S: Right now for one geographic area, LANDFIRE is putting together effects of treatments on fuels for LANDFIRE refresh. For vegetation type, looks at stand characteristics, base height, fuel model, if have low/mod/high severity events (fire, mechanical, etc.), stand development and absence of treatment. Rule sets/inputs for fuel transition. This is being done through the Interagency Fuels Committee, using FVS (forest vegetation simulator). In FPA, could build in a set of defaults results for the FPU inputs. Treatment is based on map zone and treatments. This is an internal process to LANDFIRE – would need to talk to them about availability.

Quigley: Probably trying to bite off too much to pull in LANDFIRE treatment stuff (above) – could maybe use small bits and pieces.

LANDFIRE will be doing this refresh though next June.

Danny: Could start rolling with the geographical areas that we have. Spreadsheet is lots of numbers, is computationally bothersome to do bookkeeping but straightforward. Pair up with standard run, do some neat things to find out what happens when treat and don't treat. Shouldn't be that complicated to set up.

Karin Riley: Interim step could be a neat menu with some of basic treatments.

- Would be done before Stage 1, providing new grid file.
 - New grid file would be built for use in Stage 1, leans on LANDFIRE refresh. Would take some of the field's time out of the equation by being able to populate prescriptions based on historical, instead of them having to do it.
 - If for some reason you couldn't use in 2012, could definitely use in 2013 with adequate prior testing.
1. Stage 1: FSIM (15% treated)
 2. IRS (acres by FWA by Fuel Types by??)
 3. Stage II FSIM – Requires a map

Required to make it happen:

- LANDFIRE would have to deliver products. FSIM run again before October – but these things would happen in July. Earliest we could get LANDFIRE refresh for entire US would be Feb. 2011. Could start with testing in southeast.
- Ask LANDFIRE to run and deliver the standard and treated grid file for Stage 1. We could skip the step of having the FPU's develop and applying prescriptions. If LANDFIRE wouldn't do it, IBM could do it. User acceptance with the field would be lacking.
- Someone needs to do QA/QC on the product – where/how does this happen?
- Need short write-up of what this is. Describe succinctly.

Conclusion:

LANDFIRE refresh coming out, sounds like we could use it for this round. (Not a decision –will need to go to John/Kirk.) If the decision happens, with the 2008 refresh, we have the option of incorporating their dynamics into the Stage 1 fuels treatment layer. May need a layer that shows what happens if you don't do treatment. Give field opportunity to review. If do probabilistic treatment – only treat 20% and you get the effects of that, you also grow the other 80% as untreated. This works great because it captures what happens on both sides (treatment and non-treatment). Craig's spatial treatment proposal would not be a part of this.

Action Items:

Mark Finney and Karin Short “own” this process. They will make sure linkages with LANDFIRE work correctly. If issues surface, they will bring issues forth for someone to correct them.

The actual processing will go as Stage 1 has historically gone – Craig and Brent will coordinate this part.

Topic: IRS and Spatial Fuels

Note: Stage 2 large fire requires outputs from IRS, so for this discussion, will start with IRS.

LANDFIRE fuels treatments are polygons with lots of criteria so hard to make into a standard method. May come to the point where the fire planner draws polygons on a map and only the polygon is incorporated into the project.

Need something to incorporate all the other fire products that are out there (NFPORS, etc.). Tie in with them to get polygons. Gives the planner doing inputs a “one-stop shopping” experience. The planner would draw a polygon and submit to NFPORS.

Need to figure out a way to put treatments on the Landscape for Stage 2.

Joe discussed how the field lays out their treatments. With more money (at plus 60), may go to harder to get treatments, more expensive. It could show as treating fewer acres than plus 20 treatments.

Quigley: May need to make these treatments additive. As you move up, keep on previous treatments.

Bever: Don't have to constrain the FPU's to not substitute – but need to have good outcomes from performance measures.

Using Craig's previous version for Stage 2: Required lot more work for the field – go all way through and they find out they don't have enough to treat.

Conflicting messages: 1. Creates more work. 2. If want more robust, either needs to be more work by the field or someone will do it for them.

That's why it would be nice to use information from NFPORS instead of them doing two things at the same time.

Danny's proposal is we ask FPU's to send us polygons. If don't have polygons, have utility to use to develop the options. Need to have a third option to fall back to apply treatments in some fashion.

Could have a color-coding to show them where treatments would be the most effective.

Could throw historical ignition grid on top of treatment effectiveness.

One criteria is that the field wants to see where they put their treatments.

Finney – concern with heterogeneity within the polygon could make treatment prescriptions and outputs difficult – since there would be a variety of treatments in polygon. IRS would have to develop new grid file.

Sounds like most of the northwest geographic area has polygons already. This would be a good place to test.

Summary:

1. Didn't throw out possibility that FPU's could submit polygons. Instructions would describe what kind of polygons. Would address additivity and long-term fuels needs.
2. FPU's use utility for polygons that Craig has created.
3. The model would apply the Best Practices based on display where treatments are effective at reducing FIL or the probability of fire – could include the possible intersection of the two layers. In addition, there's the historic fire probability grid could be included.

Note: all three options will end up with polygons.

Mike Bevers and Craig are assigned to coordinate actions and other steps needed for this proposal. Get the right people involved in the discussion.

Topic: System-wide Calibration Strategy

Karen Short handed out printouts of various maps.

Data:

Feds – pulling from various corporate systems.

Non-fed records where available and meets our needs:

- Previous years used NASF database compiled by Texas A&M. Best available at the time.
- Last year augmented with records from NFIRS. Reporting system grew out of a need from FEMA.

Some issues with Non-fed records in general: holes in coverage for some states, some states with no records at all. Some non-fed's records not viable for information in them.

Previous years didn't use records with UTM's; this time reformatted them to use those records.

To patch holes in Non-fed records, Karen identified years with lacking data. She looked at other sources that were available and patched holes. Then started to look at, still have gaps.

Is it acceptable to have the gaps or should there be an analysis to take a stab at filling in the gaps?

She started with 1.2 million records, removed about 10% of them. Still have 1.1 million records. It almost doubled records from previous years. Acres burned is less because they removed redundant records, and these were the large fires (from complexes, etc.).

- In the west, probabilities went down due to fewer acres burned.
- In the northeast, burn probabilities went up.
- In southeast some places went up considerably because number of records increased considerably.

For tomorrow: need to understand implications to this for FIG, Large Fire, etc. Issues for non-feds to raise flags about.

Day 2
Sept. 21, 2010

Topic: LANDFIRE

Conf Call with Henry Bastian

They identified three options.

Share three options with users through GA Lead Call on Thursday Sept. 23, 2010.

Then make recommendation to Leadership.

Options:

1. Take LANDFIRE currently as-is with LANDFIRE Refresh. Delivery of products w/ SE in September, Pac NW in Dec, and then trickle through until May. Except Alaska and Hawaii in May.
 - LANDFIRE improvements data set: Nonburnable ag, bare rock & water, national borders, nonburnable urban. Building on this dataset for Refresh. Improved soils in some cases – will help w/ biophysical settings and existing veg.
 - Data call to field for polygons showing change – fire, disease, etc.
 - Know they will get limited feedback, so using LANDSAT archive to develop remote sensed landscape change product. New science – not always sure of cause agent in change so need feedback from field to help.
 - SE data call only partial success. Had to go back twice, field too busy for data call. Working better with other areas in terms of responses.
2. Defer LANDFIRE production on Refresh. Focus on delivering what they can by Feb 2011. Would take improvements dataset and remote senses change disturbances from modified sensing, and process it.
3. Work with West wide risk assessment. They took LANDFIRE improvements data layer and rapid refresh algorithms and processing change product. Talked w/ Sanborn & Leadership – they are open to that but unsure and need to discuss timelines and costs. Their contract possibly has some flexibility to extend the product to the east. Will give better acceptance from the Non-feds. Unknown quality of other local data.
4. Working with FPA staff to stand it up.

Danny: Better for FPA to adapt their schedule than have LANDFIRE release their products immaturely.

Bill: By Feb/March next year, 5 of units would be in to play. Discussion to move ahead and work with the data as it becomes available. As opposed to use interim set of data. Phase in, work out the kinks with the first set, and proceed as parts of nation become available.

Henry: Saw some head nodding from John/Kirk that this makes sense. LANDFIRE is confident in their schedule.

Danny: You're compiling all this database of treatments, disturbances, LANDSAT imagery, etc. – seems to be very rich dataset to give magnitude of change. Will you summarize and make this available? Yes – similar to Rapid Refresh approach. Will deliver updated LANDFIRE updated database w/ new polygon info provided.

Jaymee: Problems w/ using last 2 options will require several “re-dos” by the field in terms of inputting prescriptions/fuels treatments and then a redo when the refresh comes out the next year.

Bill: Will meeting in DC (2nd week of October) be timely for LANDFIRE? Yes.

Henry: SE data set will be available in Sept. Documentation will include description of transition matrices and disturbances functionality.

Henry: Anything you can do to help in communication with folks that LANDFIRE is important part with FPA but not the only bull's-eye in the process. Help users to know this is big, complicated process. They should recognize that other things are causing problems as well.

Topic: Ignition Data Implications

Karen gave overview of status of new dataset at the end of day 1.

- What are implications associated with the FIG?
 - In areas where there is no non-fed data, need to look over and see if it causes heartburn.
 - Does the Non-fed data matter to the FIG and if so, where? What resources do you put in? What lands? In addition, is it relevant to the FIG?
 - How do you use a ten-year record when non-feds only have 2 years? In the draw, 80% of the time you won't see any fires for the non-feds. Where non-fed ignitions are a big part of what is included, why would we do that?
 - If analyzing non-fed ground that uses federal resources, there will be an impact.
 - FWAs that include all non-fed land like Oklahoma are a problem.
 - Need to see distribution of where using non-fed records within FWAs? Karen has a list of those FWAs with average number of non-fed fires over the ten years. In addition, the feds average number of fires for that FWA. In many cases, excluding the non-fed fires will be a big impact.
 - Finney: it's important to have non-fed fires with non-fed resources. Not just the proportion but also the absolute numbers that move on to large fire.
 - Bill: You can have non-fed resources responding to fed fires by setting percent availability for non-fed resources.
 - Bevers: If non-fed land is included in an FWA, they get credit for that land since performance is calculated by FWA. The proportion happens at FWA – if it's 50/50 split of lands, the calculations are based on percent of land ownership. So for large fire, even though all fires can be federal, they would be split 50/50.
 - Carty: IRS would be based on percent of ownership.
 - Brent: Large Fire takes IRS info (by FWA) and ESL size. Randomly placed on FWA so could be WUI in IRS but not necessarily so in LF, same for non-fed lands. It is 50,000 years so it gets averaged so it is dispersed a little bit. If we knew it was just going to be federal fires, we could make that change. However, if include both and need to know where it starts – would be more difficult.
 - Carty: Large fire is persisted by agency level.
 - What are non-fed fires that are not in federal dataset? Can they be fires that start on federal lands that the non-fed responds to? Karen – if there are multiple fires, Karen retains the federal record over the non-fed record. If federal lands that only feds respond to, the feds are required to report it.

- **Describe the ideal situation:**
 - All non-fed, fed fires included. All non-fed and fed resources included.

- What if only have some of those cells filled and can't fill other cells – what can we do?

		Fires	
		Fed	Non-Fed
Resources	Fed	X	0
	Non-fed	%	X

- Do we need to do quality control on every FWA? If not, the FIG leads us to a point of unreasonable results.

Note for Joe: FPA doesn't enforce the unique name of an FWA – the GIS ID is unique, so you can have 3 FWAs in an FPU named Badland. However according to Brent, LF uses the FWA name in the analysis, not the ID.

Options:

- Don't include non-fed fires. Can keep non-fed resources in with lower availability. If federal resources are used is there a federal record? Not using threat fires (where feds respond to fire on non-fed lands that does not burn on to non-feds) in federal records.
- Alternatively, associate all the resources that respond to those fires. Not very practical.
- Fed fires and non-fed resources – that's okay. However, if put non-fed fires in, need to put all non-fed and local resources in and make available 100% of time.
- How many non-feds would not participate if you didn't include non-fed fires? What's the advantage of being in if you don't include all your resources?
- If FWA boundaries include all fires and all resources that respond regardless of who's fires (non-fed and feds).
- Bill: Bullet to Leadership says “*deliver useful system and analysis of federal resources by 2012*”. Information is to support 2013 allocation and 2014 budget information.
- Bevers: If FWA boundaries included Federal response areas – it would accomplish this.
- Bill: If FPU has done a good job including non-fed resources, wouldn't want to say don't include them.
- Brent: Don't have to make all decisions now – if have fires can't capture because not enough resources, you could move them. Alternatively, could change the FWA boundary to accommodate this.
- Quigley: restricting to IRS discussion – IRS fires represented in the FIG. What goes in to the FIG is a choice. Sort out whether or not the FIG should use twice as many fires as it did last time. Latest FIG has more fires. Last time FIG included non-fed and federal. Do we want to do anything different this time?
- Danny – still want to include non-fed and local fires. However, we need to be able to turn off non-fed fires. Have a filter that does that.

- Carty: ****Can add user selectable option to turn off non-fed fires.**
- Danny – what do you do when non-fed fires only include two of ten years? – It skews the results. IRS doesn't use the size of the fire, but it uses date, cause, location, etc. Can't put in zeros where you have missing data.
- Karen – could use NICC data that includes non-fed and feds statistics, fairly close. If missing years, could correlate this from subtracting out fed stats and you end up with non-feds.
- Danny – had another suggestion but I couldn't hear him: Use the information you have to interpolate the best you can. From Bill – affects calibration.
- Karen – magnitude of problem? Look at map, red shows where there are no records.
- Bill: Interpolate data and put it back to the non-feds to review/accept. If they aren't satisfied, they can provide the right data.
- Karen: has a dataset by non-feds with the non-fed fires and numbers of fires. Held at NICC. Not sure how they deal with redundancy through the reporting systems. The numbers that Karen has from other datasets jive pretty well, so somehow they are dealing with redundancy. Acres burned is more accurate than number of fires. Realize that acres are easily inflated. Start at non-fed level. In missing years, only have fed records – start subtracting that number from total (from NICC). Then, ask what proportions of total fires are within FPU's from all years that we have fires – weighted method. Deal with date issue by same method. In end, need modeled ignitions to feed in to get 200 scenarios of likely future fire years. Could focus in on problem FPU's where they have included non-fed lands in analysis.

Summary:

- We recognize there is missing data in non-fed records. Do we want to design a technique to fill in those missing records?
- On the other hand, is this an exercise that really doesn't matter? Why take this on for every place in country. For the purposes we're here for, do we need it – could be a lot of wasted effort.
- Depends on if we stay true to the design of the project. Doesn't need to be very complicated – what is the expected proportion of acres burned by FWA?
- Danny has Karen's dataset and thinks he could do it.

Danny and Karen will talk about a solution. Danny will start with one state and see if he can make it work.

Quigley's Wrap-up:

- Fires need to match the resources that match the FWA boundaries.
- If put non-fed fires in, then some degree of non-fed resources need to come in to address these.
- If FWA boundaries include fed and non-feds, need to have all responding resources included for fed and non-fed fires.
- Create toggle to turn off non-fed fires in IRS – would have to be analysis by analysis.

- If include non-fed fires, need to figure way to include missing data years. Missing would be fuel model, slope, and aspect and weather station. Could fuzz up to weather station and fuel model. Would need to keep it on burnable.
- Build in non-fed validation and opportunity to validate.

Topic: Implications of FIG dataset in respect to the large fire module.

- Finney: In FSIM, related probability of having fires of certain size to ERC of weather station – probability based on ERC – depends on historic fires and day, and ERC from particular weather station. So logistic regressions would have to be rerun because have more fires. Historic fire records and weather stream has to be associated. Not a huge deal to Finney.
- Historic date file in data system – have to update historic data file – ERC on the day of the fire. Year is needed to get weather stream and multiple fires. Dealing with some fires above a certain threshold. Is it acceptable to say most of our large fires have been captured in the dataset? If missing all non-fed records for a year, probably missing at least a couple of larger fires.
- Danny: Could get more consistent answer if you excluded all non-fed fires.
- Force ourselves to write assumption to weigh federal lands more.
- Alternatively, state that we have missing data from non-feds but we don't know what those ramifications are.
- New data needs to be loaded into the IBM system. With attributes, we could exclude non-fed fires from LFM. Don't want to have two sets of historical data.
- Is it easier to assume data you have is the best you're going to get? Alternatively, is it easier to justify other assumptions that will have to be in place?
- Making a judgment on something that takes an afternoon to see if it makes a difference.
- Danny: Run a logistic regression and a weighted regression and see how much the coefficients change.
- Can pull out fire size from Karen's data. Need the ERC data. One weather station per FPU. How to get that data set? Finney will give to Danny.

Summary:

Brent will work with Karen and Mark to get dataset to Danny so he can run regressions.

Other implications:

- Comparison between historical – reasonableness check.
- Plugged in average burn probabilities from Karen's data, results got better.
- For 2012 analysis (next cycle), years used 99 – 2008. Not bringing in 2009 data because around half of the data is missing from the feds. Could probably get it but would have to have someone clean it up; get rid of duplicates, etc. Big workload. Pros are that it matches LANDFIRE data year.

Action: The reasonable-ness tables need to be update for the missing fire years.

Topic: Gridded Weather

Picked out number of different pixels, plotted ERCs from North America Regional Reanalysis (NARR) weather and nearest weather station. By and large impressive on how averages fit. Shoulder seasons don't fit as well because weather stations can be turned off. ERCs higher in modeled data than in the real data. Absolute ERC doesn't matter; it's the trend in ERCs that we want.

When look at yearly patterns and plot out ERCs from actual versus NARR data – there are some differences – probably precipitation duration – NARR pushes out the ERC. It is hard to find all this data.

There are a lot of uses for Gridded weather – no missing data unlike actual weather stations. It would be great to use the NARR data. Can generate artificial ERC grids for entire continent – any day and any give year it would be same day. Right now all you get is the averages.

There is an intermediate step to use NARR from individual pixels in each FPU. Downsize is it still uses just one weather station per FPU. A full gridded weather stream is about 2 terabytes (calculated) - Significant system impact. There are benefits of having gridded weather.

What is the advantage to FPA to do this? Consider impacts to user acceptability. Is it really an impossibility to have full gridded weather? Political expectations are high to use gridded weather.

Issues with gridded weather – do we want to generate 2 terabytes when unknown. Can't get Gridded weather in place for 2012. Need to test to see if it makes a difference. With NARR – is it worth changing? Will it be more credible and useful analysis? It needs more testing. Benefits are unknown.

Currently weather is synthetically generated for 20,000 years in FSIM.

IRS goes to nearest weather station each day that it has completed weather – doesn't use one single weather station per FPU.

Danny: If we have a nearest weather station assigned to each ignition in IRS, why are we not using this in FSIM?

Finney: Trying to make sure getting right frequency of large fire occurrence, so need to use the same weather station used in FSIM early on.

Danny: Talk about offline – thinks there some ways to smooth this.

Jaymee: for full production it's risky for user acceptance, it needs to get tested. It could be done on the testing system.

Mark: like to get it on some system to test it out. Would like to see it as an option.

Jaymee/Darwin: would require some coding modifications but would only be seen by project personnel in FSIM – not by the users. Would need some storage.

Jaymee: Would have to be able to portray what is in the black box. Why, etc...

Finney: What process do we use to pick the pixel and not a weather station? It would get you closer to large fires growth influence.

Jaymee: What would it take to get the full gridded weather up and running?

Finney: Is it worth it? Don't know that it is or that it isn't.

Brent: Would have to change FSIM, whole stat model, how to read in weather from stage 2...

Bill: Been an assumption that this is a policy thing that will give us better results. Perception is out there. It needs some serious testing for both processes – NARR and GRID. Moreover, you would have to QA the data.

Conclusion:

- Test needs to be run on NARR data in FSIM. Would be helpful to do this on IBM system.
- Would be better to have the new NARR product. Not sure when deliverables will happen.
- **Need to come back and validate what we've concluded on this one.**

Note: Note taker was not available to capture Day Two afternoon notes.

Day 3
September 22, 2010

Topic: IRS Reasonableness Tables

- Fire discovery size versus size when crew arrives.
 - Modify model so fire doesn't begin to grow until resource arrival. However, does that mean if no resources, it doesn't grow? Who cares how long it takes to get there, it doesn't grow anyway.
 - Is this another patch and we're not going after the real problem? Is behave going to fast?
 - Kole recommends taking out all delays.
 - Comes up a lot, seems like we always sweep under the rug. Constantly out there.
 - Danny – look at algorithm – how was it calibrated? For fires initially started or for fires that have been burning already.
 - Data we have to calibrate with is the size of fire at the time they arrive. We keep trying to have our algorithm calculate that. For fires where you have dispatched unit go to it, have the user input that size. For fires that you know up-front will have no resources arrive, have the system calculate size based on start size.
 - BEHAVE never designed to be that precise. It is the set of conditions that it uses that determines growth. Probably won't find issues within the algorithm.
 - Sensitivity analysis group – issues with ROS at start time, may need to look at algorithm.
 - Are folks adjusting coefficients and other fields in order to game the model? They have been told to adjust model to match their initial attack rate for calibration.
 - Need to have model work at least as good as NFMAS did.

Topic: Carbon Production

- See powerpoint
- Could be additional performance measure
- Cohesive strategy on fuels reduction
- Above ground carbon & emissions can we expect annually, given burn probabilities?
- (Probability don't have fire times carbon expect there without fire) plus (probability of FL1 times carbon you expect to be there)...repeats for each flame length up to FL6
- California so high – shows high biomass – plots look little fishy. Tree list was from LANDFIRE (based on LANDFIRE attributes) but plots didn't have lot of quality control.
- Is there other source of estimate for percentage change? Expected emissions based on expected carbon minus actual aboveground carbon.
- Is this on John and Kirk's radar screen to implement in 2012? Kirk did talk about department's interest in carbon. Can be done off on the side. Not explicitly in FPA but can be derived from FPA data.

Topic: FWA Boundaries

- Depends on whether non-fed fires in the analysis and whether non-fed resources in analysis.
- Workload to redraw boundaries to exclude non-fed lands.
- Cal suspects better to have people look at changing boundaries so that they include fed lands in FWAs and non-feds in FWAs.
- What about the switch to exclude non-fed fires. If you turn off non-fed fires you could end up with lot of extra (non-fed) resources in system that could respond to fed fires.
- Have the ability to restrict availability response of any resource.
- Very complex: In NE, there are a lot of scattered fed ownerships in some states where non-feds respond to fed fires.
- Cal recommends FWA be agency specific. If an issue, you can go to the FWA to figure it out.
- Flexibility is built in to system.
- Western half of US, majority are put together as agency specific. Eastern half not as much.
- How do you define “agency specific”? Make use of discontinuous FWAs to delineate federal ownership and include many into one FWA.
- What about private land in federal – is that included? Do you call it federal protection versus federal lands?
- Major decision, huge workload to the field.
- Field has perception that when we define performance measures, they will define FWAs to meet those measures.
- FWA boundaries won't affect consistency of outputs; it's how they do the modeling within the FWA that is important.
- Why do we keep bringing this up if it's not an issue? Keeps showing up as an issue.
- Revisit Toggle to turn off non-fed fires:
 - If FPU included some non-fed resources at 10% because they address fed fires. If toggle is then set to change to include non-fed fires, what occurs in analysis to account for that?
 - Could have two versions of same resource with availability set to show it with limited response (when you don't go to non-fed fires), and with full response (when you do go to fed fires). Not that cumbersome.
 - Danny: At some point FPUs need to take responsibility to decide whether or not they include non-fed fires. Leave flexibility in there. Thinks folks will know this better than we do.

2011/2012 Enhancements Schedule

- Expectation from oversight group that we'll do some form of analysis in early 2011.
- Not analysis per se, but testing.
- Heard Kirk wants everything built in (spatial fuels, etc.) for 2011.
- If include spatial fuels into Stage 1 IRS, have to rerun FSIM – how can this fit in to schedule?
- So much development that has to happen, and then be tested – hard to figure out what will happen when?
- During FSIM runs, what can we test?

- Stage 1 treated landscapes
- Karen Riley is available to help out with validating.
- Redo curves.
- Any new FSIM runs need table – put in to staging.
- Rolling timeline with unknowns for deliverables – what tell OG what will be delivered in 2012. Question mark, everything depends on other things under development.
- What about Spatial fuels? Gridded weather? New validation routine? Concern we can say we'll shoot for all this, but reality includes development, testing, and be ready for implementation.
- **What else do we need to do this? More computers? Etc. Need this by Oct. 13th.**
- **It is intent of this project to deliver for the 2012 analysis:**
 - **Spatial fuels (3 options proposed)**
 - **Field has option to design own polygons, use the utility tool, or default back to modeled input.**

Issues/Systems working on (Topics for EOG):

IRS module

- There is sensitivity analysis, Diane's testing of system – from those results there will be recommendations to change IRS system – needs to be developed, modeled and tested. Simplified, calibrate, ensure it delivers, – and won't increase processing time. Includes calibration, behave, etc. **Need sequencing and timeline.**
- New modeled ignitions, issue with prevented fires. Are we feeding it right information before deal with downstream issues? Do we wait for results of other stuff before do testing?
- Need Mark and Diane in discussion to figure out increments that make sense.
- Discussion of building capability to turn on/off non-fed fires (toggle issue).
- Input data – fire occurrence, how handle non-fed/fed.
- Might want to have ready is fire occurrence data set with missing non-fed records dubbed in. Need to have conversation with Keith Smith.
- IRS Calibration issue– Do we go with percent success. Numbers of fires by fire size distribution? What is IA success – how define?
- Inclusion of severity resources. Naming convention (.base and .current) and persist validation run.
- Timeline: when do you need final IRS fixes delivered to IBM to make this ready? Nothing sounds that complicated, but doesn't mean that Mark & Diane have some things in mind. They've started but don't have conclusions.
- When is final version needed? In production, tested, stable.
 - Well before October of 2011 to make sure everything works. Tested, accepted.
 - Feb would be delivery to IBM
 - June, 2011: tested, proofed, stable from IBM in order to do LFM Stage 2.
- Ignition data – missing data needs to be resolved before Feb. Danny hopes to have wrapped up by November, 2010. Will be generated by that date.

Large Fire Module Stage 1:

- Next time run with SE Refresh data to evaluate changes. Not in the system, needs to be ingested into the system. Karen will be able to run some stuff locally off to the side.
- Change the user interface to accept more models than what we have right now.
- Note: SEM with Bighorn has support available to hire new people if needed – to implement treated landscapes.
- Change FSIM interface. Will have treated run, change constant fuels so you can select different fuel model. For standard run: use the ignition density grids so don't do ignitions randomly. More comparable to historical – like a stage 1 calibration. Basically an extra run that we don't have in our list currently. **Available and ready for us by middle of October so we can start running SE.** New LANDFIRE data means have to test locally.
- When SE (7 FPUs)run through Stage 1 using local: Each run would take a day or two, can only run one at a time. Re-sampling and buffering would take about a day. Test one thing at a time. Could start immediately. Small test set – Pac NW and SE. Would have to make periodic changes – new layer geozone by geozone.
- **At what point would you get to stable Stage 1? June 1, 2011.**

Large Fire Module Stage 2:

- **Stage 2 stable by (means running every FPU through) September 1, 2011.**
- Stage 2 requires IRS to be stable by IBM.

Fuels:

- Grasp at interim things. Plan on giving FPUs a choice of three options.
- Use LANDFIRE logic matrix for all of three options.
- Fine tuning to see what best practices are.
- This includes
 - FSIM prescriptions, and Stage 1 and Stage 2 of spatial fuels.
 - IRS fuels
- **Stable by Feb. 11 for IBM to use. Ready to be delivered to IBM. Stable requirements. (IBM will be involved in the early process as well.)**
- Use FPUs in SE for testing. We'll be doing this, not impact field.

Cost Information:

- Linked in with Stage 2 of LFM. Same timeframe of Stage 2.
- Do we want real costs or modeled costs? What actually has occurred at FPU as opposed to what the model puts out?
- Could run all historical fires through Krista's cost model. Develops a cost per acre map based on that information. If that map is unreasonable, will have to go back to the cost model. Could compare to real data. Won't make a new calibration on top of Krista's model. Need to check with Krista to see if validated (did a bunch of that for WFDSS). If it works, use her stuff directly.
- No desire to know actual suppression expenditures down to the FPU.

- At some place, someone needs to make judgment to know if it's reasonable. What about a table that allows FPU to look at costs and say if it's reasonable.
- Would be good to have actual costs – could do it to the GA level. There are units that don't have a size class cost. Krista has done it fire by fire for accuracy but don't have it at the GA level. Keep Karen Short in the loop.
- **Stable by Sept. 2011.**

AWT:

- Need to figure out how they fit in to this work
- Concept: 8 – 16 people are the fingers on the keyboard for 137 FPUs. Not centrally located but virtual. Need clean, clear direction for stability and consistency. Needs to be uniformly coordinated and communicated to all AWT, can't have various folks giving their version of direction.
- Getting data squared away in IRS and working with fuels.
- How does this group work with the Science team? Technical group and coordination group. Business leads would move stuff back and forth between IST and technical group. Program Manager would contact the IST.

Weather Stream:

- Recognition that while there's been presumed expectation that using gridded weather a vast improvement – but no testing to see if it's worth it. Mark would like process to test it to see if worthwhile. Mark wants to test the selection of single grid point inside each FPU to use NARR data to see if it's an improvement. Provides synchrony across entire nation.
- There are issues with that, NARR data not fixed yet. Delivery date in agreement is prior to end of fiscal year 2011. Tim will prioritize it and give Joe the dates.
- Based on the schedule, next two years will be testing – probably delivery and user acceptance date will be 2013 analysis. Not in FY2012 delivery. Chance it could be bumped up. With everything else, won't have time to do testing. Would have to have confidence in by Feb, and build confidence in it with our users. Then the users have to decide what point to use, and they won't know. Zero probability it would be used in 2012.

Summarize:

FSIM Stage 1: LANDFIRE refresh data with succession by fuel types: Mark and Karen

Spatial Fuels: Mike Bevers & Craig – run process that gets three options. Generated through process that Mike and Craig help generate and run. They will discuss with LANDFIRE need to generate new grid file.

Historic Fire: 1999 – 2008 data will be used. We won't have complete data for 2009.

- Budget numbers would be in line with this so won't have to update budget numbers until 2013. Budget numbers would match resources they had for fire occurrence data. Fictitious fires.
- .Current uses 2008 for last data. What is in the .Current organization? Need current budget and current resources of the most recent year. **The FPU's would have to update their (existing) resources to match their current budget – impact to the FPU's. FPU's would need new budget numbers.**

Fill in Gaps on missing non-fed data: Danny to work with Karen on this.

Gridded Weather: Testing needs to roll forward. Mark will take lead on getting testing done and reporting back outcomes. Mark to interact with Tim to see what needs to be prioritized.

Severity: Tracking severity, retain validation run, run .current w/ severity, and remove severity from all alternatives. Share results with new analysis. Change name to .base. Reconsider calibration without severity. There's time to deal with this one. Business Leads will herd this one around.

System wide calibration: LFM calibration for stage 2 will now occur at end of stage 2. Danny, Brent, and Mark will take on. Gridded ignitions in FSIM run – calibration needs to take place. Once you've done that, you still need standard run to start fires where they've never been observed. Need new name for validation run.

Reasonableness of IRS:

- Kole, Mark, and Diane
- Need to be careful that tweaking around IRS so much to get it to fit, could screw it up.
- New guidance for federal fire policy needs to be discussed.

Large Fire Module:

- Need to fill in missing data
- Conduct regressions using weights and compare without using weights – Mark, Brent, and Danny
- Reasonableness tables for size class needs to address missing fire years. Not defined by agency. Bill and Karen can begin after Danny does his thing.

Next meeting?

- Weekly Wednesday calls – get feedback from Leads if they aren't already on the call.
- **Tentatively mark out first week of November on calendars: Results from SE with new LANDFIRE data – talk implications of that, and overall updates.**
- **Do same thing for week of December 13th as a fallback.**
- Recommitment to all of steps before holidays.
- January – finalize requirements for IBM.
- AWT will be finalized by November – team kickoff in Boise on week of December 6th.

