Survey Summary: September 2013 Aerial Imagery Survey for IGIC Business Plan

The Iowa Geographic Information Council (IGIC) received a grant from the Federal Geographic Data Committee to write business plans for the development of statewide parcels, address points, and aerial imagery. As part of the information gathering process for the aerial imagery section, a survey was developed through SurveyMonkey.com to understand organizational and individual needs for a statewide aerial program. The survey was open from September 18th to September 29th of 2013. This report summarizes the results from the survey.

The survey gathered input from around the state and from a variety of organizations. Over the course of the survey period, 117 participants responded. The survey group consisted of a large group of county government representatives as well as representatives of other levels of government, private industry, education, and the non-profit sector (see details in graph below).

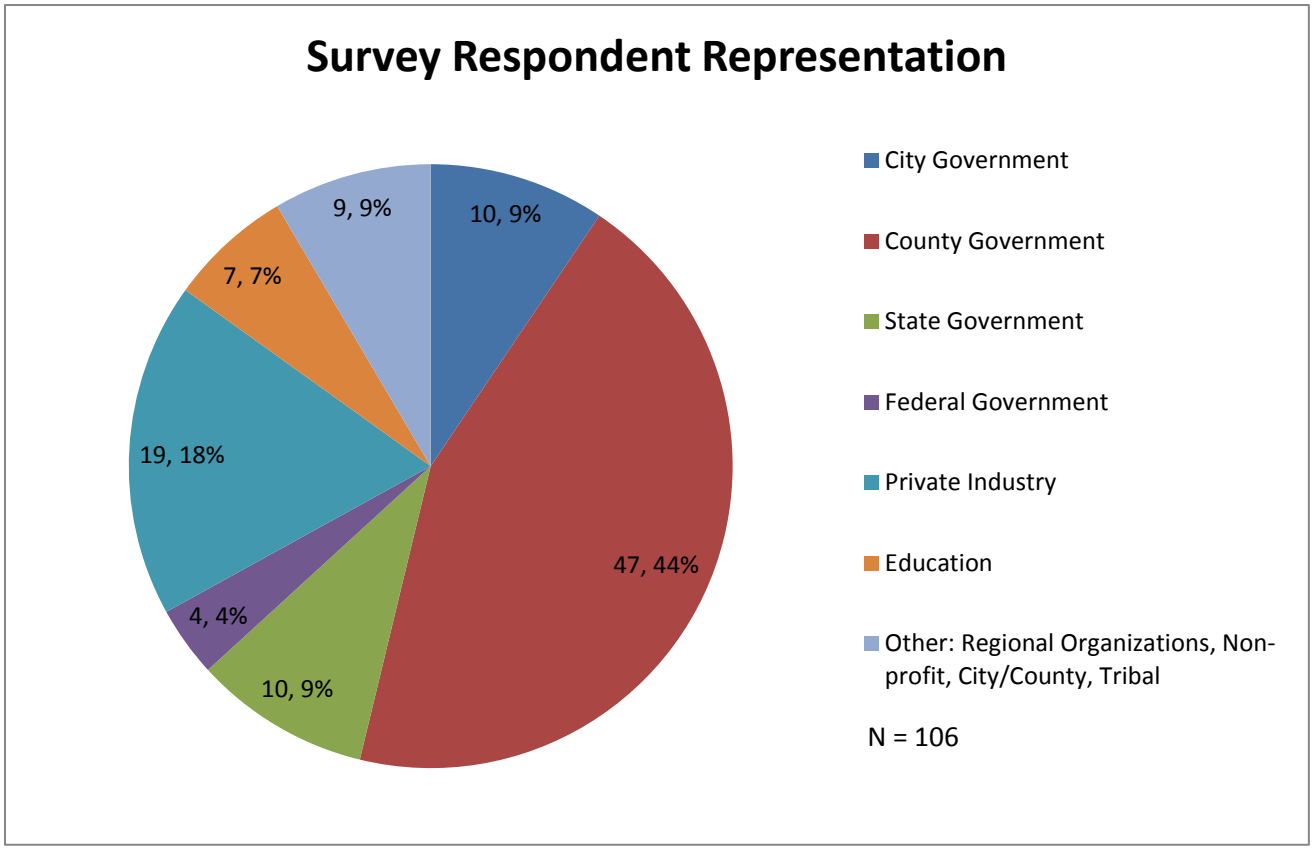

Figure 1: Survey Respondent Representation

Uses of Aerial Imagery

The survey found that all respondents were using aerial imagery in their organizations in different ways. The most commonly selected uses were online mapping, land cover classification, property/tax assessment, and emergency dispatch (Figure 2). There were a large number of other responses as well (Figure 3) including municipal government purposes (e.g. planning, nuisance, maintenance, operations) use as a base map, flood and emergency mapping/mitigation, and use as a reference to check and develop layers. The survey also revealed a number of project specific uses in areas such as public health, agriculture, natural resources, historic or archeological purposes, remote sensing, transportation planning, infrastructure mapping, crime tracking, economic development, Iowa One Call, and education/training. This question shows the diversity of uses for aerial imagery.

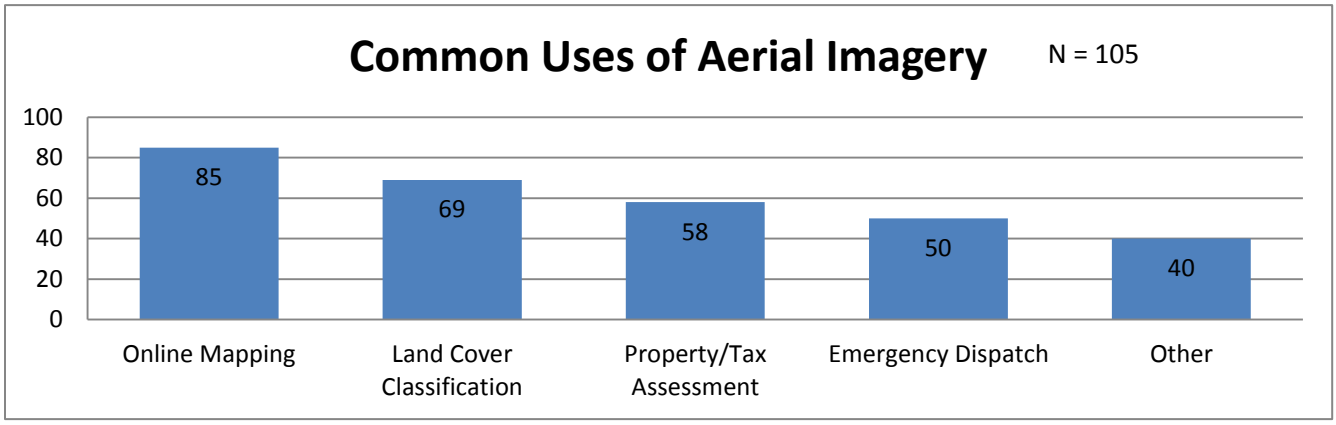

Figure 2: Common Uses of Aerial Imagery

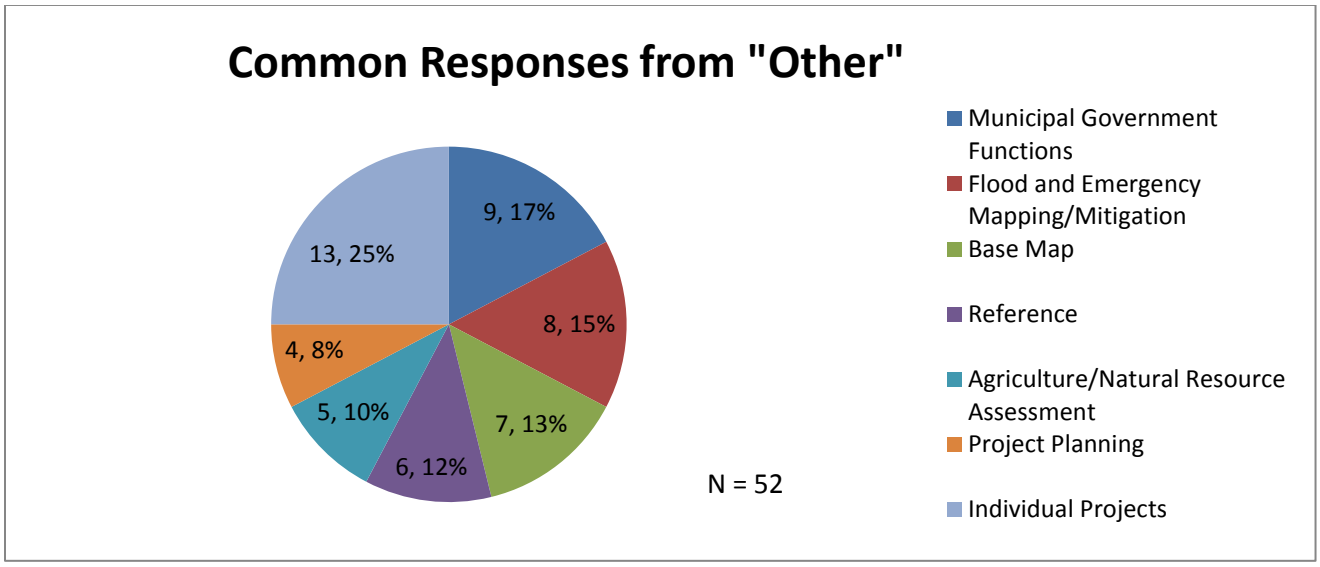

Figure 3: Common Uses for Aerial Imagery from "Other" Category

Sources of Aerial Imagery

When those surveyed were asked about the source(s) of their aerial imagery, it was clear that many respondents use imagery from a number of sources. Over 80 respondents use vendor flown imagery but most indicated that they supplemented with imagery from state and federal programs (IDNR, USDA-NAIP) as well as private imagery that is available online such as Bing or Google maps. Other responses to this question included the following sources: Iowa Geographic Map Server, self-flown with unmanned aerial vehicle, Esri, their county or assessor's office, and Pictometery.

Next the survey probed into the needs of respondents by asking specific questions about what users need in resolution, imagery, frequency of flights, and seasonal timing of flights. These questions will help begin to narrow the scope of a project and help form possible alternative scenarios for a statewide or region wide program.

Urban Area Resolution

The first question about resolution focused on the resolution needed in urban areas. Most surveyed indicated that in urban areas they would need at a minimum of 6 inch resolution in urban areas and almost as many indicated that they would prefer a minimum of 3 inch in urban areas (Figure 4). Several people left comments that they were using 4 or 5 inch resolution and several others specified that they would prefer 3 inch but would accept a maximum of 6 inch.

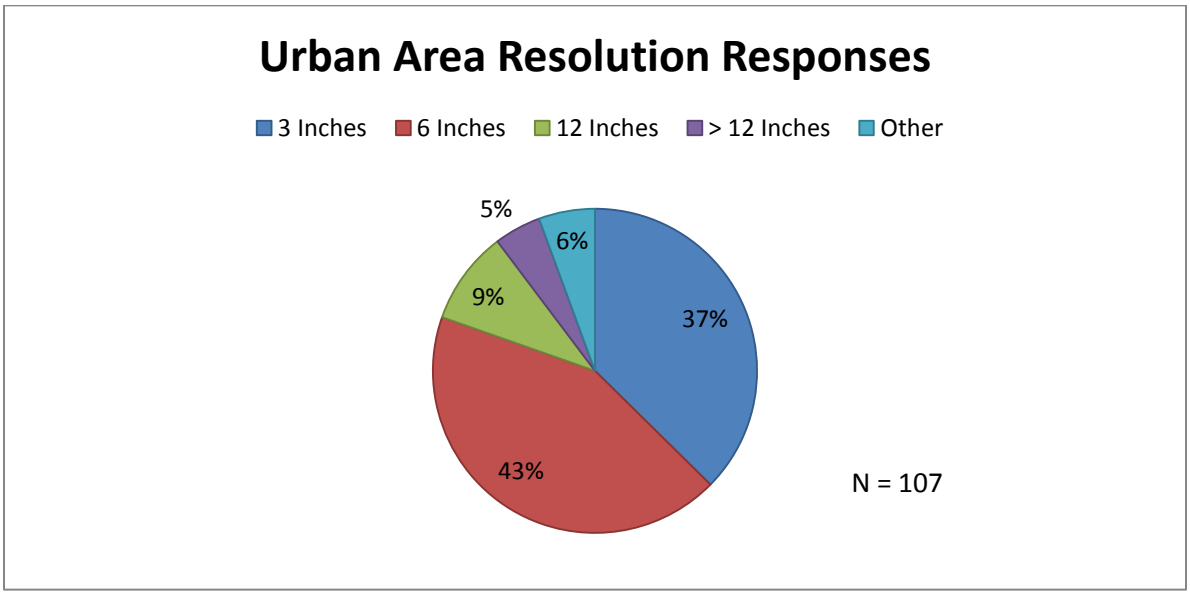

Figure 4: Preference for Urban Area Resolution

Below are several of the "Other" comments.

"Need vs. want. I want the best that I can get but I don't need anything."

"We use best available for free."

"A variety of resolutions are good but the closer the better."

Rural Area Resolution

The needs of survey respondents were similar for rural areas. A majority of those that responded indicated that they would like to have 6 inch resolution for rural areas (Figure 5). A third specified that 12 inch resolution would be sufficient. Several comments suggested that the rural and urban areas should be flown at the same resolution. There were also several comments about using the best available imagery for free.

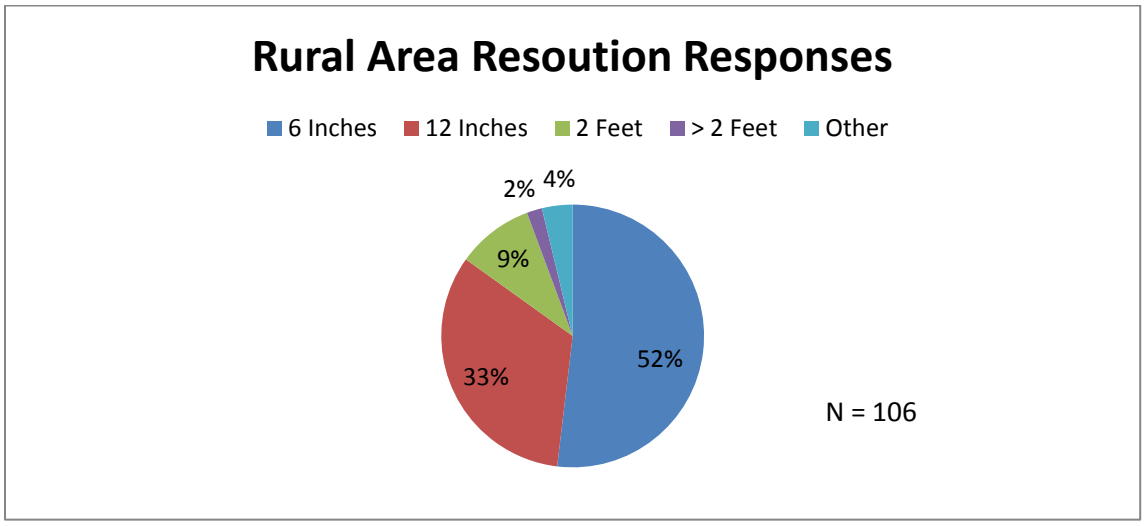

Figure 5: Preference for Rural Resolution

Preference of Update Frequency

When asked how often imagery needs to be flown, there was almost equal response rates between those that answered annually and every 3 years with biannually coming as a third option (Figure 6). One idea that came up repeatedly from the "Other" category was that for a number of respondents flight frequency could be less frequent 4 – 5 years (10 comments).

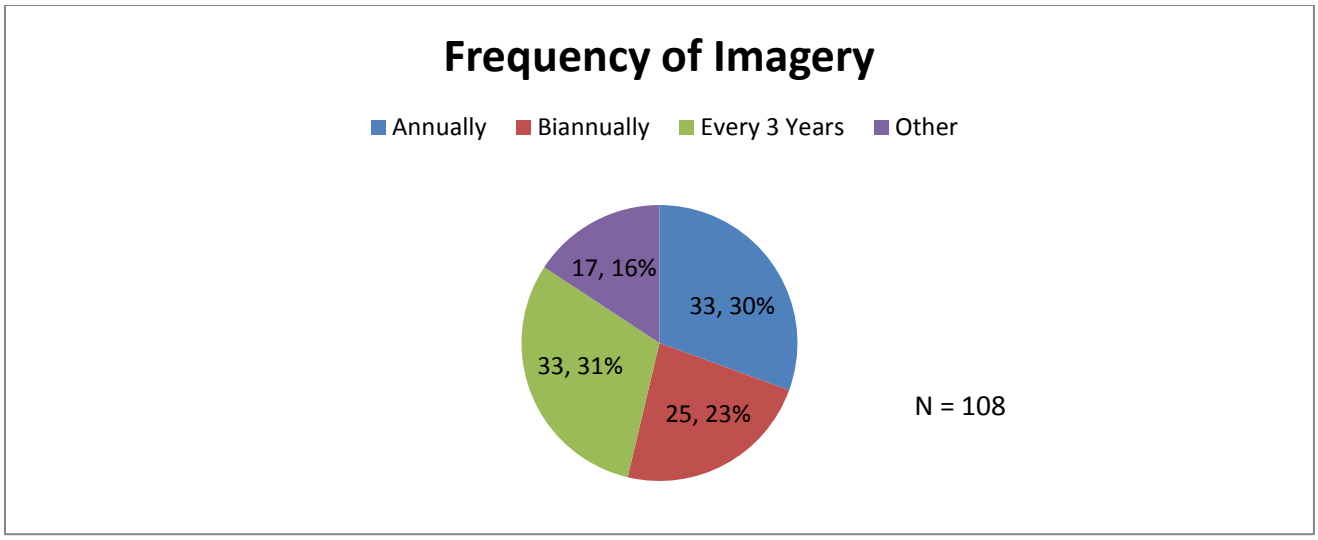

Figure 6: Frequency of Imagery

Preference of Leaf Condition

Another question that was asked in this section was the preference of leaf condition when the flight is flown. "Leaf off" would allow for better visuals of the roads and buildings and "leaf on", would allow for better visuals of vegetation types. A large majority prefer "leaf off" as seen in Figure 7. In the "other" comments, 11 people specified that they would like to see both "leaf on" and "leaf off"; however there was a clear majority that would prefer "leaf off" if only given one option.

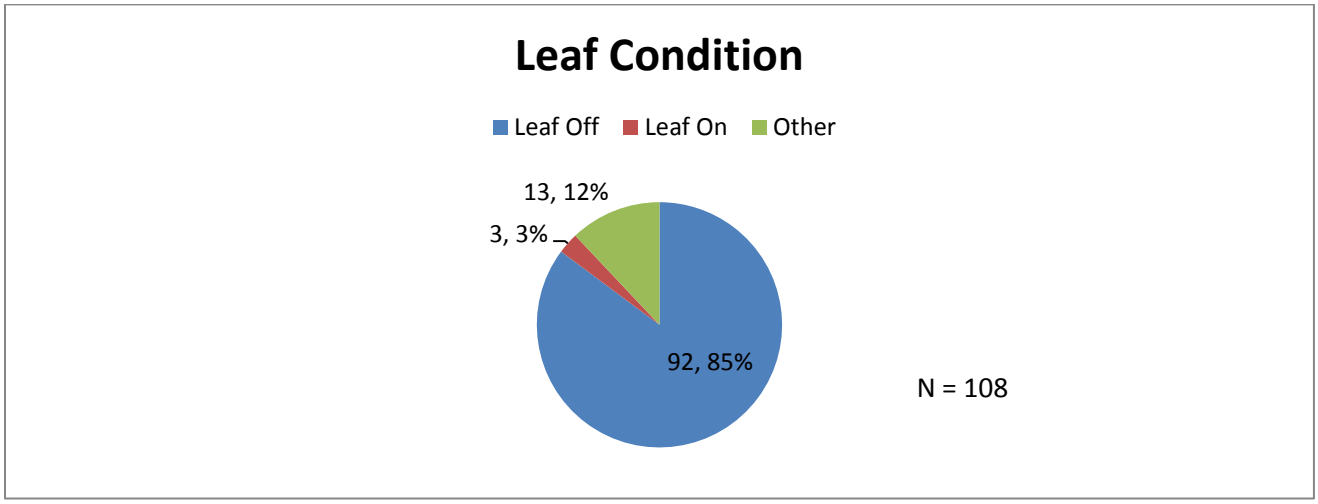

Figure 7: Preference of Leaf Condition

Preference for Oblique Imagery

When asked if those surveyed needed oblique imagery, 14% indicated that they did, 35% indicated that they did not, and 51% would consider it depending on pricing. This question was very revealing. While most surveyed showed an interest in oblique imagery only a small minority indicated that oblique imagery was a necessary consideration.

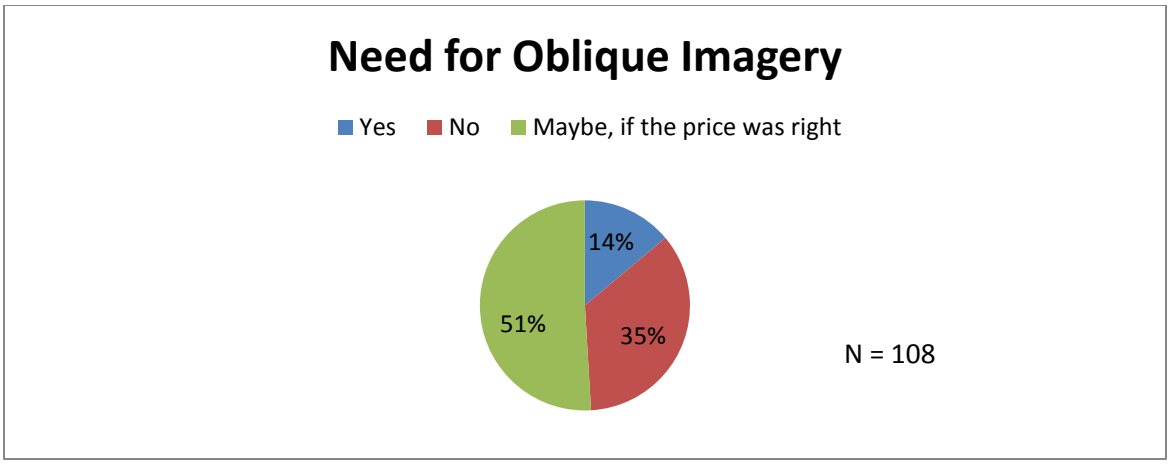

Figure 8: Need of Oblique Imagery

Preference in Imagery Wavelengths

Most surveyed indicated that regular color imagery would satisfy their requirements. One fifth responded that they would prefer infrared imagery in addition to regular color imagery, and only five percent indicated that they needed hyperspectral imagery.

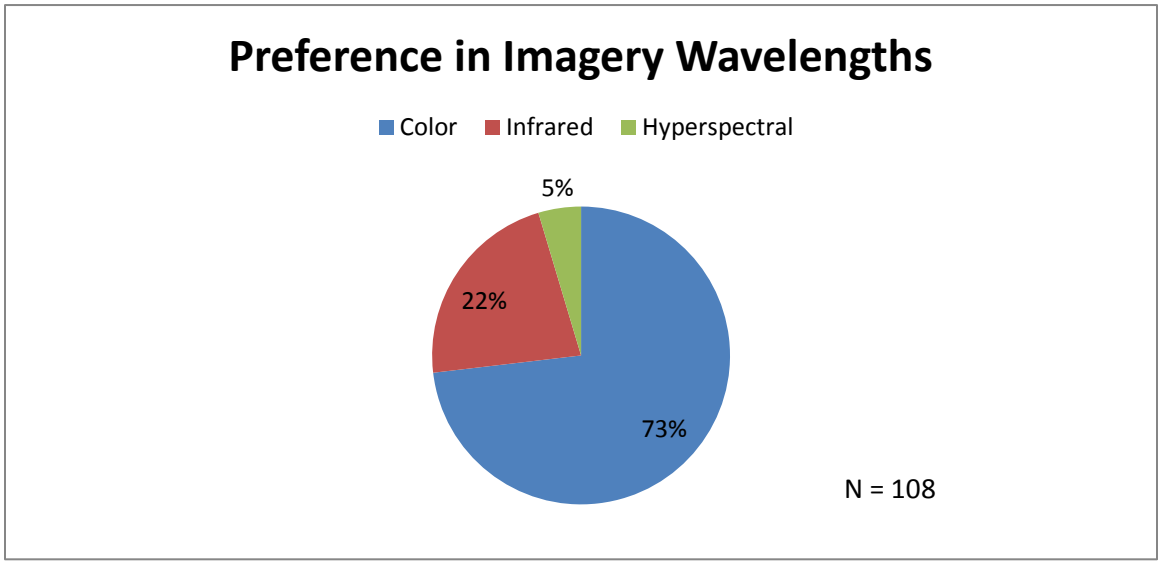

Figure 9: Preference in Imagery Wavelengths

Program Funding

When asked about funding for the project there were a variety of suggestions. Many of the responses involved multiple streams of funding from federal, state, county, and municipal agencies. Below are some other ideas and comments taken from survey responses.

"Consortium - local and state government."

"State managed program where other government and private sector partners can share the cost."

"All partners providing funds and in-kind (survey)."

"Every county (I say that and then would hope for participation from at least 70 counties) should contribute a set amount. Maybe this could be based on population? State agencies should contribute and the state general fund should pay the rest. By population in round numbers: say the flight project cost is $1.5m or about 50 cents per person. Counties pay 15 cents per person, state agencies pay 15 cents (divided up between the agencies) and the state general fund 20 cents."

"Take it from property taxes. If each parcel across the state were taxed $2 per year beyond what they pay now, that would pay for the project each year."

"Unsure. Weighted on tax-base / population of participating areas. A geographical weighted pay system would punish rural / low population areas. Mix in some state, and maybe even federal funding."

"Figure out everyone that wants it and divide up the cost of new aerials. Include private and public organizations."

Past Participation in Previous Statewide Aerial Imagery Program

Of the 102 people that responded to the survey question about participating in previous statewide aerial imagery efforts only 23.5% reported to have participated.

Interest in a Future Statewide Program

There was a positive response when survey respondents were asked whether organizations would be interested in possibly joining in a future collaborative project. Ninety-nine people responded to the question and 81.9% of the responses were either interested or might be interested in a future program.

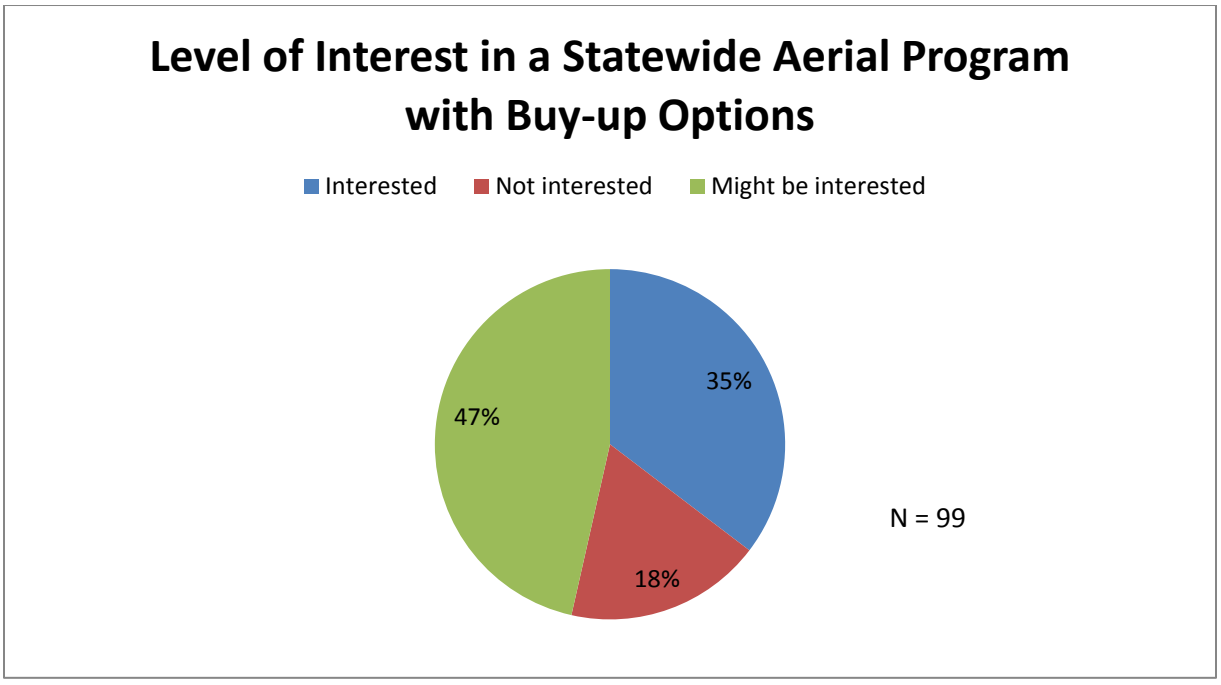

Figure 10: Level of Interest in a Statewide Aerial Program with Buy-up Options

Apprehensions to a Statewide Aerial Program

A number of those surveyed had apprehensions about a statewide aerial program. Among the most frequently stated concerns were issues around product inadequacy (inadequacy of resolution and final product), timing of the flight and timeliness of product delivery, quality and accuracy assurance, costs of the program, and ineffective coordination/project management. Below is a table with the most frequent concerns followed by several quotes.

Most Frequent Concerns with a Statewide Aerial Photography Program
1) Inadequate resolution/inadequate final product
2) Timing of flights and timeliness of product delivery
3) Quality and Accuracy Assurance
4) Costs (paying too much/ too little)
5) Ineffective coordination/ project management
6) Need to demonstrate cost savings with coordination compared to status quo (individual flights)
7) Statewide photography isn't necessary for our needs (just adjacent counties)

"Main concerns are quality and schedule. Need to use good, dense local control in areas where that is available to make it more accurate and useful for local govt. For example, we have about 100 well documented, GPS control monuments in our county. Schedule seems to be up in the air sometimes with statewide projects, perhaps due to larger scope/complexity, politics or more volatile funding sources...not sure. Perhaps that's not a fair assessment, but is at least an impression. Our county needs to plan projects 1-2 years in advance and stick to schedule in order to fund and plan accordingly. The flight schedule itself is also very important. This is particularly true for collection of leaf off spring flights were flight windows are brief and subject to weather variations."

"I think there would need to be a cost savings compared to just going 'on your own'."

"With all moving parts in state government not sure this could be effectively managed outside of one agency being responsible for the whole thing."

"Quality and price control; delivery schedule."

"Open it up to other vendors such as Pictometry."

"We'd pay for imagery we don't use..... Some fair cost sharing would need to be devised."

Additional Comments

"Coordinated projects are great and should always be the goal, however many needs may either not be met or some may pay for more than what is necessary. Leaf-off acquisitions may need to be higher resolution than leaf on and there is a use for each. Participation will be based upon intended use for this product."

"Same issues as before, but I think a possible route to go down (because it'll be tough to get one large payer or 99 people agreeing to buy in on a product) is to create some way for people to communicate that allows people to

group together for imagery. Say if Polk flies every year, Dallas, Warren, and Story every other year, then the input from cities in off years could supplement flying that other year? Or something like that."

"We have in the past flown as a larger multi-agency consortium including Illinois cities and counties. Statewide project areas should be flexible enough to include adjacent out-of -state areas where bordering communities share economic and other interests. I expect the extra-state jurisdictions would bear the full cost of their flight area but the Iowa aerial project should not preclude their participation."

Thank you to all that participated in the survey. We appreciate your willingness to express your opinions and needs.