

Possibilities for Height Modernization in NM

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**New Mexico Professional Surveyors
2010 Annual Conference**

**Marriott Pyramid North Hotel
Albuquerque, New Mexico
March 13, 2010**

Possibilities for Height Modernization in NM

Goals:

- **Review Development of Height Modernization.**
 - **Nation wide**
 - **in New Mexico**
- **Discuss:**
 - **Need and benefits of Height Modernization**
 - **Technology involved in Height Modernization**
 - **Partners, logistics, measure of success**
- **Brainstorm:**
 - **Resources**
 - **Projects**
 - **Benefits**

Possibilities for Height Modernization in NM

Outline:

- **Brief History – EFB**
 - **Height Modernization in NM – EFB**
 - **Geodetic Infrastructure for HM – Stone**
 - **Who should be involved? – EFB**
- (Break 3:00 to 3:15 p.m.)**
- **Possible projects/activities – EFB**
 - **Role of surveyors & NMPS – EFB**
 - **Dreaming and connecting the dots – EFB**
 - **Is there an action plan?**
 - **Evaluation**

Possibilities for Height Modernization in NM

Development of Height Modernization:

- **Study commissioned by Congress –**
<http://www.ngs.noaa.gov/heightmod/1998heightmodstudy.pdf>
- **Earmark funding**
- **State projects and funding levels**
- **Line item in NGS budget – success, but few \$\$**
- **Stimulus allocation – NOAA set priority, NGS low**
- **Revert to earmark process**
- **Current allocations**

Height Modernization Appropriations to Date

Fiscal Year	Appropriations (\$M)	States
FY 2001	2.25	CA, NC
FY 2002	3.75	CA, NC, LA, WI
FY 2003	3.75	CA, NC, LA, WI, MS
FY 2004	9.0	CA, NC, LA, WI, MS, AL, WA, SC
FY 2005	9.6	CA, NC, LA, WI, MS, AL, WA, TX, KY
FY 2006	9.9	CA, NC, WI, MS, AL, SC, TX, KY, AZ
FY 2007	9.9	"without direction"
FY 2008	4.995 + 1.152	Line + AL, KY, IL
FY2009	2.54 + 9.06	Line + AL, MS, LA, IL, WI + stimulus?
FY2010	2.54 + 7.8	Line + LA, IL, WI, TX, MS

Possibilities for Height Modernization in NM

Development of Height Modernization in NM:

- **NGS Convocation - 2005.**

<http://www.ngs.noaa.gov/Convocation2005/>

- **NGS Forums May 2007**
 - Las Cruces
 - Albuquerque
- **GPS seminar El Paso June 2007**
- **Digital Leveling Seminar NMSU Sept 2007**
- **Joint proposal with TSRC – FY08/09**

Possibilities for Height Modernization in NM

Development of Height Modernization in NM:

- **Grant Awarded for FY 08/09:**
 - Outreach to profession and users
 - Seminar/workshop – Albuquerque, May 2009
 - GPS CORS (2 budgeted, 1 purchased)
- **Grant proposal for FY09/10 – not funded**
- **Working Group within GAC:**
 - Information posted at <http://nmgac.informe.com/>
 - Height Modernization is now included with Cadastral, Boundary & Geodetic Control WG.

Possibilities for Height Modernization in NM

**Next, Bill Stone (NM Geodetic Advisor)
will discuss:**

**Geodetic Infrastructure
for
Height Modernization**

Possibilities for Height Modernization in NM

Who should be involved in Height Modernization?

- **New Mexico Surveyors and NMPS**
- **NGS/NMSU/NMDOT**
- **GAC and Working Groups**
- **Flood Plain Managers**
- **Counties Association**
- **ACSM/ASPRS/ASCE**
- **Vendors**

Why?

Possibilities for Height Modernization in NM

15 Minute Break!

Following the break, we will discuss:

- **Possible activities/projects**
- **What surveyors can do**
- **Connecting the dots . . .**

Possibilities for Height Modernization in NM

Possible Activities/Projects:

- **What is need for reliable elevations:**
 - **On existing benchmarks?**
 - **On new benchmarks?**
- **Outreach – who should we be contacting?**
 - **Surveyors, engineers, photogrammetrists**
 - **Contractors and construction companies**
 - **Counties and municipalities**
 - **Agencies and associations**

Possibilities for Height Modernization in NM

Overview of technology:

- **Digital leveling – excellent results, but costly**
 - **First-order level and calibrated invar scale rods**
 - **Onboard or Blue Tooth recording**
 - **Connecting to existing level lines**
 - **Logistics: planning, traffic, safety etc**
 - **Processing is largely automated**
 - **Who wants to do it and who will pay?**

<http://www.azpls.org/cde.cfm?event=283218>

Possibilities for Height Modernization in NM

Overview of technology:

GPS technology

- Logistical planning
- Static sessions
- Data reduction computations
- Geoid modeling:
 - GEOID03**
 - GEOID09**
- CORS and RTN

<http://www.ngs.noaa.gov/heightmod/Wisconsin.shtml>

Possibilities for Height Modernization in NM

Overview of technology:

- **Information management**
 - **Who decides what data are needed?**
 - **What about geodetic control specifications?**
 - **What enforcement provisions are in place?**
 - **Who establishes budget for control surveys?**
 - **How do state agencies coordinate needs?**
 - **What does it take to get good FEMA maps?**
 - **What role does NMPS play?**

Possibilities for Height Modernization in NM

Role of Geodetic Advisor and Education

- **Geodetic Advisor:**
 - **Resource to agencies, standards**
 - **Best practices - geodetic surveying**
 - **Assist with funding efforts?**
- **Education:**
 - **Curriculum and undergraduate degree**
 - **Graduates grow into professional practice**
 - **Research current topics/technology**
 - **Seminars and workshops**

Possibilities for Height Modernization in NM

Uses of Real-Time Networks (RTN)

- **Vendors:**
 - **Topcon**
 - **Trimble**
 - **Leica**
- **Existing Networks:**
 - **Albuquerque**
 - **NM DOT**
 - **Others**
- **RTN literature**
 - **American Surveyor, 2006, 2007, 2008**
 - **NGS (Henning, Stone, and web resources)**

Possibilities for Height Modernization in NM

What about Office of State Surveyor?

- **Idea promoted by Glen Thurow & David King**
 - **Benchmarks series of three articles**
 - **Raise the bar for professional practice**
 - **Better communication between professionals**
- **NM Geospatial Advisory Committee**
 - **Working Groups**
 - **Legislative agenda**
- **Find home is existing state agency.**

Possibilities for Height Modernization in NM

What can/should NM surveyors do?

- **Become more familiar with:**
 - **Procedures/specifications/equipment**
 - **Cooperative practices**
 - **Requirements of clients**
- **Help with outreach activities**
 - **Among fellow professionals**
 - **Clients: existing, potential, new**
 - **Community leaders**
 - **Legislators**
- **Help BOL with adoption of minimum standards**

Possibilities for Height Modernization in NM

Dreaming and connecting the dots?

- **What is it surveyors are best at?**
- **What is it that surveyors enjoy & earn money doing?**
- **What is our relationship with other disciplines?**
- **Would a real-time network (RTN) be worth it?**
- **To what extent are we willing to share data?**
- **What are we willing to do to get what we want?**
(Be careful what you ask for, you might get it!)
- **Example - Height Modernization in Wisconsin**

Possibilities for Height Modernization in NM

Dreaming and connecting the dots? (continued)

- Education, what is surveying body of knowledge?
 - ACSM Committee: Josh Greenfeld, Chair
 - Presentation in New Jersey in February
 - Panel discussion at ACSM meeting in Phoenix

<http://www.globalcogo.com/sbok.ppt>
- Education, possible graduate program at NMSU
 - Begin as certificate program and evolve to degree
 - Goal is to become a source for surveying educators

Possibilities for Height Modernization in NM

Dreaming and connecting the dots? (continued)

- **What is our professional involvement?**
 - **With other surveyors?**
 - **With engineers?**
 - **With photogrammetrists?**
 - **GIS**
 1. **Technicians?**
 2. **Professionals?**
- **What agencies develop policies involving:**
 - **Spatial data?**
 - **Professional accountability?**

Possibilities for Height Modernization in NM

Is there an action plan?

- **Height Modernization got started in NM**
- **Many reasons we have not done more.**
- **Is there a need for Height Modernization in NM?**
- **What parties should be discussing options?**
- **Can the benefits be demonstrated?**
- **Should we start with polishing our image?**
- **What is our credibility with the Legislature?**
- **Course evaluation:**
 - **Please complete with comments as desired.**
 - **Turn in to monitor or registration desk.**

Possibilities for Height Modernization in NM

The End

Have a safe trip home.