

U.S. DEPARTMENT OF
ENERGY

Office of
**ENERGY EFFICIENCY &
RENEWABLE ENERGY**

Welcome to REMOTE Inspection

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REMOTE Inspection Program

What is Remote Inspection

Purpose

Setting up Virtual Inspections

Process of Inspection

What the Contractor/Permit Holder Needs

Tips, Overcoming Hurdles, Lessons Learned

New Methods

Solar Industry

- Southern Nevada Building Officials were approached
- Improve que time from submittal to permit issuance
- Changes started
- The word REMOTE
- Change



Plumbing / HVAC Industry

- Had concerns for the safety of inspectors and the liability of an inspector climbing ladders
- Homeowner safety as well for attic access obstruction
- The code requires that for an inspection:
 - To be the duty of the person requesting inspections
 - To provide access and means for inspection of such work



Residential Video Inspection Program

- Residential scopes greatly benefit the homeowners, as they do not have to take off time or wait for inspections.
- Benefit to contractors to potentially only make one trip to job site.
- No wasted travel time for inspectors. Reduced wear and tear on city vehicles

Residential Video Inspection Program

Types of Inspections:

- Rooftop Solar
- Aluminum Patio Cover
- Water Heater
- Water Softener
- Plumbing Re-Pipe
- Gas Line Extension for BBQ and Fire Pits
- A/C Change out
- Attic FAU
- Main Line Water Repair
- Electrical Service Change
- Electric Car Chargers and Storage Systems
- Spa Circuit
- Detached Storage Sheds not to Exceed 600 Sq. Feet

Note: If for any reason the Inspector is not able to complete the inspection via the Residential Video Inspection Program, every effort will be made to route a field inspector to complete the inspection the same day. If this is not possible, the inspector will schedule a field inspection for the next business day.

Video Inspection Program Process

1. Prepare to receive the call:

- Must be at least 18 years old or with an adult to perform the video inspection.
- Ensure smart phone or tablet is fully charged.
- Respond to call from Inspector.
- Be prepared to accept video call at scheduled time.
- Have all required tools as necessary for inspection.
- Turn off notifications that may interrupt the call. This is an important step, because notifications can freeze Skype and will cause delays to the inspection and a possible failed inspection.
- Use ear buds with a microphone to improve communication.
- Set phone so that you have the small screen view of what the inspector sees:
 1. Tap the Skype screen to access the tool bar.
 2. Tap the camera icon.
 3. In the small view the inspector sees, tap the reverse camera icon.

2. Start inspection:

- Begin inspection at street view looking at the structure.
- The address must be shown in the initial view.
- Follow the direction of the inspector.
- Walk inspection in a clockwise direction horizontally then bottom to top vertically (if more than one floor).
- Make notes of any corrections.

3. Inspection results:

- Inspector will inform you if the inspection receives a pass, partial or fail.
- The inspector will update the permitting system with the results at the completion of the call.

During COVID-19: Remote Inspection Program

Purpose during COVID-19:

- The purpose of the City of North Las Vegas Remote Video Inspection is to allow the development community to have continued momentum during the Coronavirus pandemic.
- To safeguard the City employees and the public while still performing critical inspections.
- There were several families waiting to move into new homes, as well commercial timelines that were dependent on us to maintain.

During COVID-19: Remote Inspection Program

Inspections:

- All inspections to be performed via video means.
- No in-person inspections (staff working from home).
- Photos allowed when approved by the jurisdiction, provide enough photos to allow for a complete inspection.
- Documents sent via email PDF (third party daily reports, final reports, approved revisions etc.).



Remote Inspection Program Process

1. Inspector gets schedule at home via VPN or other means


- Inspector calls each contact to schedule inspection, gives time window, and agrees on media platform.
- Some inspectors have contractor/customer text them when they are on project site.
- Inspector allots a minimum amount of time to perform inspection.
- Inspector lets customer know they may be performing an inspection when their time slot occurs and will call them back when finished.
- Inspector gets all documents electronically or via video at the time of the inspection.

2. Start Inspection

- Inspector validates permit information.
- Inspector accesses all documentation.
- Inspector guides the inspection process.
- Contractor/customer follows direction of the inspector.

Remote Inspection Program

Setting up virtual inspections:

- List of the inspections allowed to be performed remotely.
- Determine the method of media used to stream the video i.e.: Skype, FaceTime, Hangouts, Google Duo, Google Meets, Zoom, WebEx.
- How is the inspection going to be scheduled?
- How is the inspection going to be performed?
 - Video, Drone, Photos
- How will you follow-up with documents? QAA, Reports, Permits.
- Archiving. Are you going to keep the video? New software option available

Remote Inspection Program

What the contractor/customer needs:

1. 4G Wireless service -
Ensure inspection location and smart phone or tablet has minimum 4G connectivity.
2. Media account i.e.: Skype, FaceTime, Google Duo, Google Meet, Hangouts, Zoom.
3. Prior to scheduled inspection time, ensure all necessary tools based on type of inspection are readily available. For example: tape measure, level, GFCI tester, flashlight, step ladder, etc.

Post-COVID-19: Remote Inspection Program

Tips, Overcoming Hurdles, Lessons Learned

- Contact information of contractor/customer is imperative
- Utility reconnections
- Getting Plans downloaded for projects inspectors go to regularly
- Get contractors to think like an inspector
- Filter all inspections to Appointments plus or another scheduling platform so the customer can choose the inspection

Changes will continue to occur AS THE PROCESS GROWS.



Remote Inspection Program

When life returns to “normal”

- Identify efficiencies that were created due to COVID-19.
- Increase program guidelines to allow for more inspections via video.
- Identify the projects where an in-person inspection is most critical.
- Follow up on projects that may have needed a closer look.



“There is no pain in change itself, there is only pain in resistance to change.”

Post-COVID-19: Statistics

- Over 11,500 inspections performed via video March to May 2020
- Building inspections
- Fire inspections
- Projects to revisit once in person inspection has been permitted has been identified



Photo Inspections

- **Common problems:**
 - Sending too many pictures
 - Can have lighting issues
- **Benefits:**
 - Pictures can be zoomed in on
 - Clear quality
 - No connectivity issues/lagging etc. that comes with live video



Photo Inspections



- Contractors can continue working after sending pictures and getting the OK from the inspector
- Not stopping the job for a day / few days to wait for an inspector to drive out and inspect

Drone Inspections

- Most people call them drones. Technically, they're **UAVs** (Unmanned Aerial Vehicles) or **sUAS** (Small Unmanned Aircraft Systems)
- Valuable industrial inspection tool
- Drone-based inspection reduces the risk to inspectors and increases the speed of inspections.
- Contractors could deploy drones to conduct inspections with live feed connections to the building department.
- Many other possibilities!

Drone Inspections

PROS:

- Safety of Inspectors
- No ladders required
- Speed of inspections
- Video recording of inspection
- Provide detailed inspection
- Clear and precise observations
- Relative cost of equipment
- Report illegal actions / activities

CONS:

- Teaching Inspectors to become UAV pilots
- FAA flight restrictions
- Special licenses for FAA restricted air zones
- Inappropriate exposing of people
- Report illegal actions / activities
- Accidental damage to property
- Insurance cost
- Battery life / Flight time

Solar

Check List:

- Verify panels are located per plans
- Verify panels are secured
- Verify electrical is in approved conduit
- Electrical properly supported
- No damage to roof structure
- Venting is not removed or blocked
- Fire access path



Misc. Drone Uses

Moisture content.
Thermal inspection.
Building envelope inspections.
Confined spaces.
Dangerous locations.
Remote locations.
Skyscraper inspections
Tunneling inspections.
Verify quantity materials.
.... And many more

Jurisdiction Usage

Small jurisdictions can utilize a fleet of drones to create a robust program and facilitate aerial inspections for the following:

- Public Works Facilities
- Police Department
- Emergency First Response
- Building Inspections
- GIS



What Remote Inspection is NOT

- **NOT the answer to all inspections**
 - Some things are just more thorough in person
 - Many inspections take longer
 - Trusting in technology
 - Inspector learning curve
 - Individual comfort levels
- **NOT ideal for complex projects**
 - Complex projects have more detail in person

New Methods

- **Changes to the program**
 - Getting back to work
 - New considerations of remote inspection
 - Change the name. No more “Residential Video Inspection Program”
- **What inspections are required per the adopted codes**
 - Check the codes
- **Changes to media requirements**
- **New software popping up**



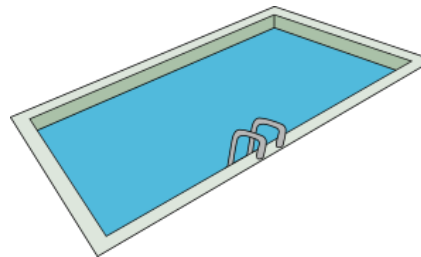
Residential Scopes Added

Gazebos

Residential Room Additions not to Exceed 600 square feet
(where the permit is obtained by a licensed contractor)

Residential Swimming Pools

Privacy Masonry Walls (interlocking without soils retention)



Single Family Subdivisions

Underground Electrical

Gypsum Board (that is not a part of a fire-resistive-rated assembly or shear assembly)

Exterior Lath

Gas Tag

Electric Tag

Privacy Masonry Wall (interlocking without soils retention)

Residential Subdivision Signs



Commercial

Wall Mounted Signs
Monument Signs
Cell Tower Antenna Co-Location
Temporary Generators
Simple Mechanical, Plumbing, and Electrical
Gate AVI
Wrought Iron Fence
On-Site Utilities

Commercial

Fire Rehab

Garage to Sales Office

Temporary Construction Trailers

Tenant Improvements of B & M Occupancies not to
Exceed 3000 Square Feet



Conclusions

Change Takes Change

Start with what is comfortable

Include staff in the planning process

Keep track of lessons learned from both internal and external customers

Make changes as necessary

What will be next?



MOVING FORWARD ▷

Remote Inspection Program

Thank you



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